Romic Environmental Technologies Corp.

CAD 009 452 657

East Palo Alto, California
TSD Facility

Appendix 3

Closure Plan

November 2001

Rev. 4/05

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1 CLOSURE PLAN

22 CCR 66270.14(b)(13). 66264.112

This Closure Plan describes the procedures Romic Environmental Technologies Corp. (Romic) will follow to close the existing and planned hazardous waste management units at the East Palo Alto facility. Closure activities will be performed in accordance with 22 CCR 66264 Article 7. The closure requirements for waste piles, surface impoundments, land treatment, landfills, or incinerators do not apply to Romic's East Palo Alto Facility.

The Closure Plan has been prepared to describe procedures that Romic will use when hazardous waste activities cease to occur at this location. In accordance with regulatory guidance, however, Romic prepared the closure cost estimate assuming that closure will be performed by an independent third party. This Closure Plan further assumes that all applicable Corrective Action requirements have been satisfied before the initiation of closure activities.

1.1 Facility Description

Facility Identification
Romic Environmental Technologies Corp. (Romic)
East Palo Alto Facility
2081 Bay Road
East Palo Alto, CA 94303-1316

Telephone: 650-324-1638

EPA/State Identification Number: CAD 009 452 657

The East Palo Alto facility receives a broad range of hazardous wastes for treatment and disposal management. Various treatment and disposal options utilized at the facility include:

Solvent Recycling: The distillation of used thinners and solvents (e.g., lacquer thinner, methanol, acetone, mineral spirits) to achieve a reclaimed solvent product of specified purity for resale/reuse.

Ethylene Glycol Recycling: The distillation of used ethylene glycol (e.g., antifreeze) to achieve a useable product for resale/reuse.

Fuel Blending: The mixing of impure waste materials of a sufficiently high heat content to produce a consistent alternative fuel for use in off-site cement kilns.

Liquefaction: Blending of solid and semi-solid materials with liquid material (e.g., diesel fuel, waste solvent) to achieve a liquid consistency for use in the fuel blending process (see above).

Wastewater Treatment: Treatment of onsite or off-site wastewaters that are contaminated with organic and inorganic contaminants. Various aqueous treatment techniques are used including distillation processes, biological treatment, filtering and ultra-violet oxidation to meet local sewer agency discharge limits.

Neutralization: Adjustment of caustic and acidic wastes to achieve a neutral pH. Neutralized waste streams may undergo secondary industrial wastewater treatment to remove organic contaminants.

***Inorganic Treatment**: Treatment of inorganic wastes using methods including: neutralization/pH adjustment, chemical precipitation, oxidation/reduction, de-watering, filtration, and stabilization. Note – planned activities are shown in italicized text throughout this Closure Plan. These items have not been installed yet and are included in the November 2001 permit application awaiting approval.*

***Solids Consolidation:** Sorting and homogenizing containers of solid hazardous waste to remove liquids and non-uniform solid debris (e.g., sharps) prior to consolidating materials with similar hazard characteristics into a uniform, bulk waste stream for off-site transfer and disposal.*

***Debris Shredding**: Processing contaminated solid materials through an industrial shredder to facilitate transportation for off-site disposal.*

"Off-Site" Transfer: Waste shipped off-site for treatment/disposal without on-site treatment.

MISCELLANEOUS MANAGEMENT PROCESSES

Consolidation of Small Containers: Field service technicians package and/or receive small quantity chemicals (e.g., outdated chemicals, lab packs) packaged in DOT-approved containers by hazard class for sorting and treatment using one or more of the above processes.

***Aerosol Depressurization**: Puncturing of commercial aerosol containers to remove flammable propellant and contents. Propellant is released to an air emission control unit. The hazardous material is collected and transferred to the fuel blending operation.*

***Drum Crush:** Crushing of nearly empty and empty drums. Residue removed from nearly empty drums is treated on-site, as appropriate.*

***Truck Wash:** Washout of tanker trucks. Rinse water is treated in the onsite Aqueous Treatment system, or neutralization system, as appropriate.*

The facility's waste management units and corresponding capacities are listed in Section 1.5, Maximum Waste Inventory. Hazardous waste management units and operations are discussed in detail in Sections D and E of the Part B Application. Figure D-1, Facility Layout, is the site map of the existing and planned facilities and identifies areas discussed in the Closure Plan and Closure Cost Estimates. This is included here as Figure 3.

1.2 Closure Performance Standards

22 CCR 66264.111

Closure activities at the Romic facility are designed to meet general federal and state closure performance standards. The closure activities will:

- Minimize the need for further maintenance;
- Control, minimize, or eliminate to the extent necessary to protect human health and the environment, post-closure escape of hazardous waste, hazardous constituents, leachate, contaminated run-off, or hazardous waste decomposition products to the ground, surface water, groundwater, or atmosphere; and
- Ensure that any equipment, structures, or buildings left in place on site contain no hazardous waste or hazardous waste constituents.

Generally, these standards will be met by:

1. Removing or processing all regulated waste present at the facility at the time of closure, and

2. Decontaminating all contaminated equipment, containment system components, structures, and soils to meet specified closure performance standards, or

3. Removing from the site all contaminated equipment, containment system components, structures, soils, and equipment. These waste materials will be properly characterized to determine if they are hazardous wastes in accordance with 22 CCR 66262.11 and 22 CCR 66261.3(e) and will be sent to an appropriate disposal, treatment, or recycling facility.

All mobile or fixed equipment that has been used to process or handle hazardous wastes will be cleaned, decontaminated, and re-used, salvaged, or, if necessary, disposed off site at an appropriately-permitted facility as described in paragraphs 2 and 3 above.

Specific closure performance standards that will be used to determine if equipment, structures, or media meet the general performance standards described above are listed below.

1. **Metal Tanks** – Attainment of the closure performance standard for metal tanks will be based on wipe samples showing inorganic constituents of concern below levels which will be agreed upon with the Department of Toxic Substances Control (DTSC) prior to start of closure. The closure performance standard for organic compounds will be non-detect based on the test methods specified in the referenced Sampling and Analysis Plan.

2. **Plastic Tanks** – No performance standards will be established for such tanks. They will be removed and managed appropriately as hazardous or non-hazardous waste, depending on waste analysis testing. If the plastic tanks were used to manage a RCRA listed hazardous waste, the tanks shall be assumed to be hazardous, but they may be tested to determine if they meet land disposal restriction (LDR) requirements.

3. **Lined Containment Areas** – Attainment of the closure performance standard for lined containment areas in good condition (no cracks, gaps, or deterioration of the liner through to the concrete) will be based on wipe samples showing inorganic constituents below levels which will be agreed upon with the DTSC prior to start of closure. The closure performance standard for organic compounds will be non-detect based on the test methods specified in the referenced Sampling and Analysis Plan.

4. **Unlined Containment Areas** – This will apply to unlined containment areas or to containment areas with liners that have deteriorated or have had identified deficiencies at some point during their use. A risk-based clean-up standard will be developed at time of closure, using current toxicological protocols and data at that time. A cost for preparation is included in the closure cost estimate.

5. **Soils** – A risk-based clean-up standard will be developed at time of closure, using current toxicological protocols and data at that time. A cost for preparation is included in the closure cost estimate.

6. **Small Miscellaneous Pieces of Equipment** – The used rinse water from cleaning small pieces of equipment will be compared to the fresh (unused) rinse water to verify if the equipment item has been decontaminated. The allowable increase above that used for cleaning will be based on the EPA Region 9 Preliminary Remediation Goals for tap water.

An independent professional engineer registered in California, or their agent, will monitor all closure activities to ensure they are conducted in accordance with the approved Closure Plan. Closure activities to be monitored by the independent engineer, or their agent, include tank system decontamination, secondary containment decontamination, and soil sampling and analysis. The certifying engineer, or their agent, will visit the facility at least weekly. These inspections will be part of the facility's operating record.

1.3 Estimated Date of Closure

There are no current circumstances that would indicate the need to close the Facility. However, for the purposes of this Closure Plan, the Facility will be assumed to operate for another 25 years. The Facility may remain in service past this date as economic and regulatory factors allow.

1.4 Amendment of Closure Plan

22 CCR 66264.112(c)

The Closure Plan may require amendment during the course of the facility's life, or in some post-closure contingencies. The facility will amend the Closure Plan upon any of the following:

- Changes in operating plans or facility design affecting the Closure Plan (such as the construction of new units),
- Change in anticipated year of closure,
- Unexpected events arising during partial or final closure that affect the Closure Plan,
- Changes in regulations that affect facility closure, or

- Request of the Department.

If any of the first four of the above events arises, Romic will submit to DTSC a request to modify the Closure Plan. In the case of planned changes, Romic will request the Closure Plan modification at least sixty days prior to any anticipated change. Romic will request a Closure Plan modification within sixty days after any unanticipated event, effective date of regulatory change, or Department request, unless the Department request occurs during partial or final closure. If a Department request occurs during closure, Romic will submit a modification request within thirty days of the Department's request.

Post-Closure Applicability

Although Romic will not generally be subject to post-closure requirements, these requirements may become applicable upon any of the following contingencies:

- Groundwater contamination due to a release from regulated units is confirmed at the time of closure,
- Romic departs from the "clean closure" scenario (i.e., non-attainment of the closure performance standards, especially the risk-based clean-up standards).

1.5 Maximum Waste Inventory

22 CCR 66264.112(b)(3), 66270.14(b)(13)

The maximum waste inventory includes all hazardous waste management units shown in the Part B Permit Application. For purposes of the Closure Cost Estimate, two bases are used. The Base Case Facility is all existing storage tanks and process units as of November 9, 2001 plus the Solids Consolidation, Debris Shredding, and Truck Washing operations. The remaining units proposed in the Part B Permit Application are identified separately. The summary of unit capacities and maximum waste inventory bases for each closure cost category are summarized in the table below. The maximum waste inventory volume for the Closure Cost Estimate is slightly greater than the unit capacities shown in Tables D-1 through D-5 of the Part B Permit Application. This reflects additional volumes of waste that may be present in equipment such as filter presses at the time that the facility is closed.

The types of wastes handled by the Facility and their characteristics are as defined in Tables C-3A through C-3L in the Part B application. Since Romic manages on-site generated wastes the same as off-site generated wastes that are brought into the facility, the above quantities include Romic generated wastes such as still bottoms and personal protective equipment (PPE). In addition, closure activities will generate additional waste materials. The estimated volumes of closure-generated wastes are detailed in the Closure Cost Estimate worksheets in Appendix 4. These wastes will include rinse waters from cleaning tanks and containment areas and contaminated PPE and disposable cleaning or sampling equipment.

This Closure Plan includes waste inventories from process equipment. However, the capacities of process equipment are not included in the Part A application since process equipment is not considered to be storage units. Therefore, the maximum inventory for tanks and process equipment listed above are greater than tank capacities listed in the Part A of the permit application. The maximum waste inventory shown here and used

in calculation of the closure cost estimate includes wastes received from off-site, process-generated wastes (such as still bottoms), and wastes generated from Romic activities (such as contaminated personal protective equipment).

Part B Capacities (gals)			Closure Cost Estimate Capacities (gals)	
Container Storage	571,615	571,615	Container Storage	571,615
Existing Tank Storage	570,300		CCE Base Case Tank and Process Units (includes 1,700 gal Truck Wash Tank)	874,847
Existing Process Units	293,838			
	Subtotal	864,138		
Planned Tank Storage	59,537		CCE Planned Tank and Process Units (includes volumes for drum wash, filter press, etc.)	211,885
Planned Process Units	143,160			
Subtotal Planned Units		202,697		
	Total	1,638,450	**Total**	1,658,347
Other Wastes (Same for Both Base Case and Planned)				
Roll-off Bins				320 cubic yards
On-site Generated Waste, not included in above (e.g., activated carbon in process use)				80 cubic yards
			Subtotal Bins	400 cubic yards

1.6 Disposition of Wastes

For the purposes of the Closure Cost Estimate, off-site treatment and disposal of all hazardous wastes is assumed (assuming independent third party closure). However, the provisions below describe how Romic will manage closure wastes during self-implementation of closure.

During closure, Romic will treat hazardous wastes onsite in appropriately authorized waste management units. This will include the inventory of off-site waste remaining at time of closure implementation as well as wastes generated during closure. Closure generated wastes will include water from decontamination and disposal of consumables such as PPE. Wastes that cannot be treated onsite under the prevailing DTSC permit will be sent offsite to an appropriate TSDF.

Prior to sending any closure wastes offsite for treatment and/or disposal, Romic will assess that each of the TSDFs are permitted to receive the specific waste. In addition, an effort will be made to determine if the TSDFs are in good standing with the authorizing agency. This can be assessed by determining if the TSDF is approved for use by EPA pursuant to the CERCLA Offsite Rule under 40 CFR 300.440.

Standard TSDF waste acceptance procedures will be followed including establishing waste profiles. However as described in Section 1.8, Romic intends to use permitted units at the time of closure to treat the

maximum amount of off-site waste and closure generated wastes. Residuals volumes left from final cleaning will require offsite disposal.

Any closure wastes sent offsite for disposal will be placed in proper containers that meet the United Nations performance-oriented packaging standards or bulk containers that meet the U.S. Department of Transportation (DOT) requirements under 49 CFR 172 et seq. All containers used will be properly labeled at time of waste generation and manifested in accordance with generator standards under 22 CCR 66262. A hazardous waste manifest form approved by the state where the receiving facility is located will also accompany all shipments of hazardous waste. Shipments will also be placarded and marked in accordance with U.S. DOT rules. If the receiving state has no special manifest form, a California Manifest form will be used. Land Disposal Restriction (LDR) Forms will be filled out for any hazardous wastes subject to LDR standards. This form will be filled out to identify all the applicable waste codes and treatment standards. These LDR forms will be either maintained with the profile or they will accompany each hazardous waste manifest, depending on the standard procedures of the receiving TSDF. Copies of any LDR forms used will be included with the closure report.

1.7 Closure Schedule

22 CCR 66264.112(b)(6), 66270.14(b)(13)

This section discusses the anticipated closure schedule for the final closure of the facility. Romic will notify DTSC in writing at least 45 days prior to the date final closure is expected to begin, and at least 7 days prior to any closure sampling.

As discussed later, the container storage areas, the tank systems, and the processing equipment will be subject to closure. Since on-site generated wastes will generally be treated within the facility, a portion of the storage and treatment units will remain active to handle closure-generated wastes. As discrete areas or

equipment items are decontaminated per this Closure Plan, they will be marked so that they will not be further used. For example, if West Storage Building #1 has had waste removed and been decontaminated, this area will be marked off and so identified. Any closure-generated wastes will be placed in authorized container storage areas that have not yet been closed.

Due to the variety and quantity of wastes and the size of the closure areas, closure is expected to take longer than 180 days. Therefore, Romic will likely require an extension of the 180-day closure time allowance. Table App. 3-1, Closure Schedule, presents the anticipated time required to complete each closure step.

1.8 Closure Activities

22 CCR 66264.112(b)(1) through (7), 66270.14(b)(13)

This section describes closure activities for the hazardous waste management units at the facility. Section 1.8.1, describes the inventory elimination procedures, Section 1.8.2 describes the decontamination procedures, and Section 1.8.3 describes the sampling and analysis procedures. Romic will close the facility sequentially to allow for use of the various waste management units during inventory elimination and decontamination. All closure activities shall be in accordance with a site-specific Health and Safety Plan (HSP), see model copy in Attachment A.

Romic has provided costs for soil sampling and analysis, however, if soil and/or groundwater contamination from past practices is evident, it may be addressed separately under post-closure activities.

During closure, and until DTSC accepts Romic's final closure certification,

- Romic intends to use trained employees for closing the various units. However, facility closure cost estimates are based on third party performance of the closure project.
- All required daily, weekly, and monthly inspections will be performed until the final closure date.
- Normal site security measures, as discussed in Section F of the Part B Permit Application, will be maintained until the final closure certification is accepted by the DTSC.
- The required and applicable standard operating procedures for proper waste management, worker health and safety, and site security will be followed at all times.
- All hazardous wastes within the facility and hazardous waste management units will be processed in the same manner as they would be under normal operating circumstances. Hazardous wastes and process residues will continue to be segregated and stored according to their compatibility.

An independent registered professional engineer (or their agent) will monitor all closure activities to ensure they are conducted in accordance with the approved Closure Plan. The certifying engineer (or their agent) will monitor closure activities such as storage and treatment system decontamination, secondary containment decontamination, and soil sampling and analysis.

After receiving the final volume of waste into the facility, the container inventory will be eliminated first through on-site treatment and off-site disposal or shipped directly off site for treatment and disposal. Empty containers will be salvaged, reconditioned, or disposed at an appropriate off-site facility.

To the maximum extent allowed, the wastewater treatment system and distillation equipment will be used to treat wastewaters and rinsate generated from closure activities. Therefore, the final closure of these units will occur after all container inventories have been completed and the majority of the site-wide containment area decontamination and confirmation sampling and analysis have been completed.

If the containment areas cannot be successfully decontaminated, they may require removal and disposal at an off-site permitted facility. An alternate procedure will be to break up the containment areas prior to any decontamination and dispose of them at an off-site permitted facility.

After the containment areas have been decontaminated or removed, foundation soils will be sampled and analyzed for contaminants as described in Section 1.8.3, Sampling and Analysis.

1.8.1 Inventory Elimination

22 CCR 66264.112(b)(3), 66270.14(b)(13)

The hazardous waste inventory processed during closure will be managed in the same manner as they would be under normal operating circumstances. However, closure costs reflect the cost associated with sending all inventory off-site for treatment and/or disposal. Bulk shipment by rail is assumed for wastes sent to facilities that can receive rail shipments. The elimination scenarios are described in detail in the Closure Cost Estimate Worksheets, Appendix 4 in Volume 2 of the Part B Permit Application. Remaining treatment chemicals will be sold for beneficial re-use, or will be transported for use at another facility.

It is assumed for purposes of third party closure, that the drums will be inventoried in accordance with information on the hazardous waste labels and Romic's waste tracking numbers (see Section C). An allowance has been made that a small percentage of the drums will have labels that are illegible or non-existent. These drums will be subject to hazard categorization (haz cat) procedures to identify the waste type and therefore, the appropriate disposal disposition. After the haz cat procedure, additional laboratory testing may be required for disposal purposes.

1.8.2 Decontamination Procedures

22 CCR 66264.112(b)(4), 66264.114, 66270.14(b)(13)

This section describes the decontamination procedures that will be used to attain the closure performance standards specified in Section 1.2 during closure activities at the Facility. The decontamination policies and/or requirements listed below are based on federal and state regulations, USEPA closure guidance manuals, DTSC closure guidance manuals, and Romic company policies and standard operating procedures. The decontamination policies and/or requirements are designed to ensure that all federal and state requirements for decontamination during closure will be met. Decontamination procedures to be used during closure activities are described below:

- All equipment, including mobile equipment and earth moving equipment that has come in contact with hazardous waste constituents during closure activities will be decontaminated before use outside the contaminated area or removal from the site.
- During closure, contaminated equipment, containment system components, and structures will be decontaminated for salvage or beneficial use, or disposed of at an appropriately-permitted off-site facility.
- Contaminated environmental media (soil and/or groundwater) will be cleaned-up to risk-based cleanup levels or removed and disposed at an off-site facility that is appropriately authorized to handle such wastes.
- Any residues generated during decontamination activities will be handled in accordance with all applicable requirements of 22 CCR 66264.114. Decontamination rinsate will be appropriately treated on site or shipped off site for treatment and disposal.

- Secondary containment surfaces, tanks, and equipment will be decontaminated to achieve the closure performance standards if they are to be left onsite or sent off-site for reuse. Secondary containment surfaces, tanks, and equipment that will be sent for off-site disposal, may be cleaned or they may be removed and disposed without cleaning.

During the final decontamination stage, a small temporary decontamination area (approximately 10 feet by 20 feet) may be established on site once all concrete containment areas have been decontaminated. This area will be constructed of plastic sheeting or an equivalent protective material, and will be used for decontamination of sampling equipment, personal protective equipment, and other miscellaneous small equipment used during decontamination and sampling efforts.

After the final high-pressure washing has been completed and decontamination rinsate collected, the plastic sheeting or equivalent material and rinsate will be removed for off-site treatment and disposal at an approved/permitted facility.

Decontamination Technologies

Tanks, piping, process equipment and containment systems will be decontaminated using one or more of the following technologies:

- Rinsing by high-pressure washers with water or detergent/surfactant solution will be done to remove scaling and surface debris. Steam cleaning may be used in addition to or in lieu of high-pressure water wash
- Hydroblasting will be used to remove surface materials not removed by pressure washing or steam cleaning. Hydroblasting is a high-pressure technology that scours the surface, removes contaminants (and part of the surface in the case of concrete), and carries the contaminant away from the surface. Hydroblasting is a physical technology that is not dependent upon the contaminant being soluble in the aqueous phase.
- Some tanks, piping, process equipment and containment systems may be evaluated and will be removed for off-site disposal in lieu of being cleaned.

Decontamination of Containment Pads

The decontamination procedures discussed here cover all concrete containment surfaces including, but not limited to, the container storage areas, loading/unloading areas, container processing areas, and tank system containment structures. These procedures also apply to the sump systems throughout the facility.

The containment surfaces will be inspected for cracks or gaps prior to decontamination to determine possible biased soil sampling locations. The containment pads then will be decontaminated by an appropriate decontamination procedure, such as hydroblasting. The containment surfaces will be inspected

once again for cracks or gaps to determine possible biased soil sampling locations. Areas damaged solely by the cleaning process need not be considered for biased sampling locations.

Decontamination of Tank Systems

The decontamination procedures discussed in this section will be used for the regulated tanks, distillation equipment, and associated pumps and piping. These procedures also will be used to decontaminate waste processing equipment (e.g. shredder, liquefaction system).

Decontamination will be accomplished using an appropriate hydroblasting/waterwashing method to achieve the closure performance standard identified in Section 1.2. Verification will be done by wipe sampling if the tank is to be reused, transferred to another location for use, or left onsite. If the tank will just be removed for disposal, confirmation sampling may not be required.

Rinsate and cleaning residue from all washings will be characterized per 22 CCR 66262.11, and managed accordingly. All rinsate will be removed by a vacuum truck or equivalent means. Incompatible rinsate and cleaning residues will not be commingled. The collected rinsate will be treated appropriately on site, or when necessary, sent off site for treatment and disposal at an appropriately permitted facility.

Decontaminated tanks that meet the closure performance standard may be re-used, sold for re-use, or scrapped. Decontaminated tanks may also be left in place on the containment pad unless removal of concrete or soil under the containment system becomes necessary. As an alternative to decontamination and leaving tanks in place, tanks may be decontaminated and scrapped.

Decontaminated tanks to be scrapped will be rendered unusable prior to leaving the facility. This will be accomplished by cutting the tanks in half, or by cutting the ends off of the tanks. Prior to removal of decontaminated tanks, written proof of decontamination will be obtained from the independent professional engineer monitoring closure activities.

As an alternative to tank decontamination, tanks may be rinsed and disposed of at an appropriately permitted off-site facility as hazardous waste, non-hazardous waste, or exempt scrap metal after waste characterization in accordance with 22 CCR 66262.11 and 22 CCR 66261.3(e).

Decontamination of Equipment

Before transport off site, all equipment subject to closure will be decontaminated to remove gross contamination. If equipment is to be left onsite, it will be cleaned by one or more of the following methods as appropriate: scraping, rinsing with high-pressure water, steam, a caustic-type industrial cleaning solution,

or detergent solution. The equipment will be cleaned until the closure performance standard is met. Equipment decontamination may be performed in a specific decontamination staging area with adequate secondary containment. All rinsate from decontamination will be collected and treated appropriately at the facility or, when necessary, sent off site to an appropriately permitted facility. If equipment cannot be decontaminated, it will be disposed of as hazardous waste at an appropriately permitted off-site facility. Equipment potentially requiring decontamination includes trucks, sampling equipment, forklifts, hoses, pumps, and cleaning and decontamination equipment.

1.8.3 Sampling and Analysis

22 CCR 66264.112(b)(4), 66264.114, 66270.14(b)(13)

This section generally describes the sampling and analysis procedures to be used for closure activities at the facility. Detailed information on sampling and analysis is provided in the Sampling and Analysis Plan, Attachment B to this Closure Plan. All collection of samples will be in accordance with the Sampling and Analysis Plan, which includes provisions for using standard test methods, a California-certified laboratory for analyses, proper chain-of-custody procedures, and quality control/quality assurance samples such as field blanks, trip blanks, and duplicate samples.

Secondary Containment Sampling and Analysis

Sampling and analysis of secondary containment structures will be performed in accordance with the recommendations outlined in DTSC's "Permit Writer Instructions for Closure of Treatment and Storage Facilities". Chip or wipe samples will be collected and analyzed as specified in the Sampling and Analysis Plan, Attachment B to this Closure Plan.

Tanks, Process Equipment, Ancillary Equipment, and Structures

Sampling and analysis of tanks, process equipment, ancillary equipment, and structures will be performed in accordance with the recommendations outlined in DTSC's "Permit Writer Instructions for Closure of Treatment and Storage Facilities". Wipe samples will be collected and analyzed as specified in the Sampling and Analysis Plan, Attachment B to this Closure Plan.

Soil Sampling and Analysis

The soil underlying secondary containment pads will be sampled and analyzed to confirm that no residual contamination is present. The purpose of soil sampling and analysis is to identify areas where remediation may be necessary as a result of past practices and to support such activity.

Grid and bias samples collection depths will be just below the containment system/soil interface in native soils, and at both about 1 meter and 2 meters below the interface. Soil samples will be collected through holes bored in the overlying containment systems. Samples will be collected using either hand augers, shallow test pits, or direct push sampler (for example, Geoprobe). The soil borings and samples will be collected from the approximate locations shown in the Sampling and Analysis Plan, Figure 4. The borings will be continuously cored and boring logs generated. The field geologist will screen extracted soil cores for physical evidence of contamination (e.g., odors, chemical sheen, or discoloration). The soil samples will be removed from the sampling device, sealed with Teflon tape, capped, labeled, and placed in a pre-chilled ice chest.

After the samples are collected, each boring will be backfilled with grout. The collected samples will be transferred under formal chain-of-custody documentation to a California-certified laboratory to be analyzed individually as specified in the Sampling and Analysis Plan. Other sample collection, documentation, and handling procedures will be in accordance with standard procedures described in Test Methods for Evaluating Solid Waste, SW-846, U.S. Environmental Protection Agency, November 1986.

Soils beneath all sumps in secondary containment areas will be sampled as biased sampling locations, since the sumps would be the most likely collection point of any contaminants. Locations of cracks or stains in the secondary containment system will also be priority locations for biased sampling. Visual observation of past repair locations and repair records maintained as part of the facility's operating log will be used to determine selective locations for bias soil sampling during closure. Additional samples are included for this purpose.

Grid samples will be based upon a fixed square grid, with an interval spacing determined by DTSC guidance and is detailed in the Sampling and Analysis Plan.

Analytical results from soil samples taken during unit closure will be compared to either: 1) the "background" levels for metals and "non-detect" levels for the remainder of the parameters, or 2) the risk-based site-specific levels determined as described in Section 1.2, Closure Performance Standards. The "non-detect" and "background" levels will be established as specified in Attachment C, Sampling and Analysis Plan. DTSC will be provided with all analytical results and included in discussions to determine when closure has been successfully completed.

Romic will use approved analytical methods capable of achieving quantification limits that are adequate for demonstrating whether compliance with clean closure standards defined in this Closure Plan. For example, the following methods, or approved methods that replace them, shall be used:

- EPA Method 8260B for volatile organic constituents;
- EPA Method 8270C for semi-volatile organic constituents;

- EPA Method 6010B for metals; and
- EPA 8081A for organochloride pesticides.

1.8.4 Partial Closure

22 CCR 66264.112(b)(4)

During the course of operations it may be necessary to close portions of hazardous waste management units in the facility. An example of this type of closure would be the replacement of a tank that has developed a leak or integrity assessment indicates that the minimum shell thickness is inadequate for storage or treatment.

Tanks and ancillary equipment may be closed in their original location, or moved to an alternative location on the site, as long as the closure is conducted within a secondary containment system. Tanks and ancillary equipment shall be moved to an alternative location only if such transport can be achieved without spilling any waste from the vessel or ancillary equipment; and the movement will not jeopardize the integrity of the waste management equipment. Romic shall maintain records of partial closure activities and include them with the final documentation of Closure as described in Section 7.3. The procedures for partial closure are described in detail in Attachment C, Partial Closure Activities.

2 POST-CLOSURE PLAN

22 CCR 66270.14(b)(13), 66264.118(a), 66264.197(c)(2), 66264.228(b) and (c)(1), 66264.258(b) and (c)(1)(B), 66264.303(c), 264.310(b)

Romic has not operated hazardous waste disposal units at their East Palo Alto facility. The tank system at the facility includes adequate secondary containment, and thus will not be subject to the contingent post-closure plan requirements of 22 CCR 66264.197(c)(2). If Romic cannot achieve clean closure, Romic will submit an amended closure plan and/or a post-closure plan. Soil and groundwater contamination from past practices are identified separately in the facility's corrective action order issued pursuant to RCRA Section 3008(h) and administered by the EPA. It is expected that corrective action will be completed prior to final closure of the facility. Therefore, post-closure cost estimates are not provided. Should ongoing corrective action measures not fully address soil and groundwater contamination, a post-closure permit could be required.

3 CLOSURE COST ESTIMATES

22 CCR 66270.14(b)(15), 66264.142

This section identifies some of the key assumptions and bases used in developing the Closure Cost Estimate (CCE), Appendix 4 to the Part B Permit Application. As stated earlier, This Closure Plan (and the CCE)

assumes that all applicable Corrective Action requirements have been satisfied before the initiation of closure activities.

Regulatory Requirements

- Romic has prepared a closure cost estimate in accordance with 22 CCR 66264.142(a).
- Romic will adjust the closure cost estimate annually for inflation, and/or other factors, in accordance with 22 CCR 66264.142(b). Romic will make this adjustment within sixty days prior to the anniversary date of its closure financial assurance mechanism.
- Romic will revise the closure cost estimate as necessary in accordance with 22 CCR 66264.142(c), within thirty days of any modification of the Closure Plan that results in a change in the cost required to close the facility.
- Romic will revise the closure cost estimate and closure financial assurance mechanism at least thirty days before operating a new hazardous waste management unit.
- Romic will maintain at the facility a copy of the most current cost estimate in accordance with 22 CCR 66264.142(d). Detailed cost estimates for closing the facility at maximum waste inventory are provided in Appendix 4, Volume 2 of the Part B Permit Application.

Cost Factors

The unit costs associated with closure of the facility are based on the following assumptions and procedures.

- The unit costs for all closure activities are based on the cost of hiring a third party to close the facility. A third party is someone other than the parent or subsidiary of the owner or operator. However, it is intended that trained site personnel will be used to conduct closure activities to the greatest extent possible in order to maintain continuity of facility operation.
- Unit costs were obtained, where possible, from actual operating costs and experience, and contractor estimates.
- Unit transportation costs used for estimating inventory elimination costs are based on contractor estimates for transporting bulk and containerized solids and liquids to an off-site permitted treatment and/or disposal facility. Bulk liquid shipments are assumed to be by rail for wastes when practical (e.g., aqueous wastes and fuel blending wastes). Unit disposal costs for off-site landfill, incinerator, hazardous waste fuel, and other treatment options are based on Romic operating experience.

Other Assumptions

- Treatment costs are rates presently estimated for existing waste management units.
- Supplies and equipment will be salvaged to the extent possible. However, salvage value has not been incorporated into the closure cost estimate. Romic on-site equipment (e.g., crane, lifts, and vacuum tankers) will be used where possible to close the facility. Outside contractors' equipment will be used as necessary.
- Cost for decontaminating sampling equipment between samples is considered to be negligible.
- A total of 164 drums (2.5%) were considered to be inadequately labeled and would require analysis or HAZCAT procedures to determine appropriate disposition.

3.1 Inventory Elimination Costs

The costs associated with eliminating the remaining waste inventory at facility closure are presented in the CCE. Cost estimates are based on maximum waste inventory, and are broken down by specific inventory elimination scenarios. The types and amounts of wastes handled at the facility are well documented in the annual reporting requirements to the applicable regulatory agencies. The Closure Cost Estimate worksheets identify the recent historical mix of waste into the facility to arrive on quantities of specific waste streams.

The maximum waste inventory for tanks and process equipment is summarized in Section 1.5 of the Closure Plan.

3.2 Facility Closure Costs

The closure costs for decontamination of facility equipment, waste management units, and rinsate management are summarized in the CCE, Appendix 4 in Volume 2 of the Part B Permit Application. Tanks and equipment will be salvaged to the extent possible. However, salvage value has not been incorporated into the closure cost estimate. Detailed estimates for sampling and analytical costs are included in the CCE, which allows for blanks, duplicates, and other quality control/quality assurance samples.

There are two cost estimate worksheets presented. The first is the cost for the Base Case Facility. This includes the existing tanks and permitted process units as of November 9, 2001 in addition to the Truck Wash, Solids Consolidation and Debris Shredding operations. The second cost estimating worksheet, identifies the incremental costs for each of the proposed additions. As a unit is to be built, the closure cost funding will be increased by the amount for the incremental addition above the Base Case Facility.

4 POST-CLOSURE COST ESTIMATE REQUIREMENTS

22 CCR 270.14(b)(16), 66264.144, 66264.197(c)(3) and (c)(5)

Romic has not operated hazardous waste disposal units at their East Palo Alto facility. The tank system at the facility includes adequate secondary containment, and thus will not be subject to the contingent post-closure care cost estimate requirements of 22 CCR 66264.197(c)(3) and (5). Although soil and groundwater contamination from past practices may be identified at the facility, this contamination will be addressed by the USEPA corrective action requirements. It is expected that corrective action will be completed prior to final closure of the facility. Therefore, post-closure cost estimates are not provided. If Romic is required to obtain a post-closure permit, then a post-closure cost estimate will be submitted.

5 NOTICE IN DEED REQUIREMENTS AND SURVEY PLAT REQUIREMENTS

22 CCR 66270.14(b)(14), 66264.116, 66264.117(c), 66264.119

Romic has not operated hazardous waste disposal units at their East Palo Alto facility. The tank systems at the facility include adequate secondary containment, and thus will not be subject to the contingent post-closure care requirements of 22 CCR 66264.197(c)(2) and (c)(5).

No regulated units containing hazardous wastes will remain at the site after closure; therefore, a notice in deed regarding restrictions on the use of land used to manage hazardous wastes will not be necessary. Similarly, a survey plat indicating the location of landfill cells or other hazardous waste disposal units remaining on site will not be required. If Romic cannot achieve clean closure, Romic will comply with deed notice and survey plat requirements.

6 FINANCIAL ASSURANCE MECHANISM

22 CCR 66270.14(b)(15) and (16), 66264.143, 66264.145, 66264.197(c)(4) and (c)(5)

Romic will demonstrate continuous compliance with 22 CCR 66264.143 by providing documentation of financial assurance in at least the amount of the current cost estimate. A copy of the current financial assurance mechanism is provided in the Appendix to Section K of the Permit Application. The owner/operator, chief financial officer, or their designee pursuant to 22 CCR 66264.143 must approve changes in the financial assurance mechanism.

The financial assurance mechanism will be adjusted prior to the operation of any planned units. The financial assurance mechanism will be adjusted to satisfy closure requirements as outlined in this permit application and article 7, Chapter 14 of 22 CCR.

7 Reporting and Recordkeeping

22 CCR 66264.112(a)(2), (c), (d)(1); 66264.115

7.1 Closure Notification

Romic will notify DTSC in writing at least 45 days prior to the date that final closure is expected to begin, and at least 7 days prior to any closure performance sampling.

7.2 Closure Plan Amendment

Changes in facility plans, operations or scheduling may require that the Closure Plan be amended. Additionally, DTSC may request amendments. An amended Closure Plan will be submitted to the Department of Toxic Substance Control (DTSC) with a written request for a change to the approved Closure Plan.

7.3 Certification Report Requirements

Romic will submit to DTSC certification that the final closure of the facility has been conducted in accordance with the specifications of the approved Closure Plan. This certification will be signed by Romic and by an independent professional engineer. The certification will be submitted to DTSC within 60 days of completion of final closure. The certification report shall include the following:

1. Certification by an independent registered professional engineer;
2. Supervisory personnel description;
3. Summary of Closure Activities;
4. Field Engineer Observation Reports;
5. Sampling Data and Analyses (i.e., sampling locations, soil boring logs, chain of custody, analytical results, etc.);
6. Discussion of Analytical Results;
7. Manifests showing disposition of waste inventory;
8. Modifications and Amendments to Closure Plan (if applicable);
9. Photographs.

7.4 Recordkeeping

A copy of the approved Closure Plan, and subsequent authorized amendments, will be maintained at the facility until closure is complete and certified.

TABLES

TABLE App. 3-1 CLOSURE SCHEDULE

CLOSURE STEP	EST. TIME REQUIRED	EST. COMP. DATE
Inventory elimination	12 weeks	Week 12
Container storage area decontamination	4 weeks	Week 16
Tank systems decontamination	6 weeks	Week 22
Process unit decontamination	6 weeks	Week 28
Ancillary equipment decontamination	4 weeks	Week 32
Soil sampling/analysis	8 weeks	Week 40
Preparation of closure report and certification	8 weeks	Week 48
Submittal of closure certification to DTSC	8 weeks	Week 56

ATTACHMENT A

HEALTH AND SAFETY PLAN

Article I. PURPOSE

The purpose of this Health and Safety Plan (HASP) is to assign responsibilities, establish personnel protection standards and mandatory safety practices and procedures, and provide for contingencies that may arise during waste handling operations. This Plan must be read prior to working at the closure site to ensure proper planning (e.g., availability of equipment, etc.).

This Health and Safety Plan identifies site features which may cause substantial or imminent injury or serious chronic illness to personnel if an exposure should occur. Potential pathways of injury/stress from physical, chemical, and biological hazards should be considered. These hazards may be caused by confined space, moving equipment, dust, fumes, gases, noise, heat stress, flammable, corrosive, carcinogens, insect bites, bacteria, etc.

Section 1.01 In addition to this Health and Safety Plan, the following additional documents must be included in this Plan prior to the start of work:

Section 1.02 Training/Medical records for all employees:

(a) HAZWOPER 8 Hour Refresher Certificate (Current - i.e., within last 12 months);
(b) HAZWOPER 8 Hour Supervisor Certificate (If applicable);
(c) Medical Clearance Certificate (e.g., from last annual/biennial physical);
(d) First Aid/CPR Certification (Current).

Section 1.03 For those who may be required to wear an air purifying respirator:

(a) Current Respirator Fit Test Record;
(b) Medical Clearance to wear a respirator (this is normally noted on the Summary Profile for the annual physical).

Article II. PROJECT DESCRIPTION

Section 2.01 Facility Closure of Romic Environmental Technologies, East Palo Alto location.

Article III. LOCATION

Romic Environmental Technologies
2081 Bay Road
East Palo Alto, CA
EPA ID No. CAD009452657

See Table 1, Site Location Map.

Article IV. SPECIAL CONDITIONS AND SITE RULES

As of this writing Romic Environmental Technologies Corporation is an active Treatment, Storage and Disposal Facility. Romic Environmental Technologies is located at 2081 Bay Road in East Palo Alto, San Mateo County, California, at Section 30, Township 5S, Range 2W. (North Latitude 37o28'36 and West Longitude 122°7'4). The plant is approximately ½ mile west of San Francisco Bay. The facility consists of approximately 14 acres. Hazardous waste operations occur on

approximately 1.8 acres, and planned hazardous waste operation will occur on approximately 2 acres. Land use for the facility is permitted and zoned as Industrial.

Article V. DESCRIPTION OF SITE WORK

The Romic Environmental Technologies Corp., East Palo Alto Facility, is a commercial hazardous waste storage and treatment facility. Wastes managed at the facility include a broad range of industrial and household wastes, including halogenated and non-halogenated solvents, Fresno substitutes, waste oils, sludges, oxidizers, corrosive wastes, resin/adhesives, debris/solids, soils, wastewaters, resin beds, paints, aerosols, batteries, fluorescent tubes, and labpacks. The facility can receive, store and process wastes in either bulk loads or container.

Article VI. HAZARD IDENTIFICATION

The following is a summary of general site safety rules that must be followed by all Romic personnel or their subcontractors (or visitors):

Section 6.01	Firearms, weapons, explosives, ammunition, intoxicating beverages, or recording equipment, and pets **ARE NOT PERMITTED ON SITE;**
Section 6.02	Speed limit on site is 10 miles per hour (mph)
Section 6.03	Minimum personal protective equipment (PPE) throughout most of facility includes hard hat, safety glasses, safety steel toed boots or shoes, shirts with sleeves, long pants;
Section 6.04	Follow the facility traffic guidelines;
Section 6.05	**NO SMOKING, EATING, DRINKING OR CHEWING OF ANY TYPE** is permitted in the chemical accumulation areas (this also applies to the cab of the vehicle once it has entered the plant work area); **NO OPEN FOOD OR BEVERAGE CONTAINERS ARE PERMITTED INSIDE THE GENERAL WORK AREA;**
Section 6.06	Equipment and supplies must be stored neatly at all times;
Section 6.07	All site personnel must become familiar with the Romic's emergency notification system;
Section 6.08	All injuries must be reported to Romic Site Safety Coordinator immediately and Romic's PM;
Section 6.09	Safety permits, if required (e.g., for hot work, confined space entry, or lockout/tagout), must be obtained through Romic's Health and Safety Department and the Project Manager
Section 6.10	All personnel working on-site must complete the Romic's site specific orientation training prior to the start of any work activities.

Article VII. Chemical Hazards

The primary chemical hazards to be encountered by Romic personnel are listed in section 4.2. There is potential for exposure to these contaminants through inhalation, ingestion and adsorption through the skin.

Article VIII. Routes of Exposure

The following sections discuss various routes of exposure that may occur if chemicals are present.

Article IX. Inhalation

The most common route of toxic material entry is the respiratory tract. The respiratory tract is divided into three regions. The upper airway (extends from nose to larynx), lower airway (trachea, bronchi and bronchial that serve as a conducting airway between the nasopharyngea region and alveoli), and alveoli (basic functional unit in the lung and the primary location of gas exchange). Therefore, when controlling occupational hazards, the primary objective is to prevent atmosphere contamination. This should be accomplished through the use of engineering controls whenever feasible. Then effective engineering controls are not feasible, or while they are being instituted, appropriate respirators should be used.

Article X. Ingestion

Ingestion of toxic material occurs through hand to mouth activity, i.e., contact with toxic materials on person hands, food, drink, cosmetics, or their cigarettes. Materials ingested pass through the stomach and my be absorbed into the blood stream. After absorption into the blood stream, the toxic material may move directly to the liver or other organs or tissues. It is imperative that personnel follow guideline established in this document for use of personal protective equipment and persona hygiene standards.

Article XI. Absorption

Absorption of toxic material occurs through the penetration of the epidermis, sweat glands, sebaceous (oil) glands and hair follicles of skin. Personnel shall therefore utilize personal protective equipment in accordance with this plan.

Article XII. Respirator Use

Procedures for proper use of respirators in routine and reasonably foreseeable emergency situations.

Section 12.01 The service life of a cartridge is the length of time the absorbing material in a chemical cartridge is effective in keeping contaminants out of the respirator. Respirator cartridges are replaced when they are no longer assumed to be effective. The two methods relied upon by Romic employees shall be the use of End of Service Life Indicators and a Change Out Schedule.

Section 12.02 Respiratory Protection Equipment (RPE)
Potential inhalation hazards must be assessed before the correct respirator can be selected. The types of respiratory protection equipment are selected based upon the atmospheric hazards that may be present within the assigned task.

Section 12.03 It is the responsibility of the employee to review, assess, and determine the correct levels of Respiratory Protection Equipment that will be needed for the assigned task.

Section 12.04 Proper respirator selection depends on the type of contaminate, expected airborne concentration, and other factors such as oxygen concentration.

Section 12.05 End of Service Life Indicators (ESLI)

(a) Respirator cartridges with End-of-Service-Life Indicators may be used in lieu of, or together with a cartridge change out schedule.
(b) The ESLI must be certified by NIOSH for the specific contaminant; and
(c) shall be part of the original equipment.

Section 12.06 Respirator Cartridge Change Out Schedule

(a) To ensure that chemical cartridges are replaced before the service life ends an assessment of the chemical must be conducted to assure adherence to the change out schedule.

(b) Data is collected through a systematic process for identifying new or unfamiliar chemicals when being introduced into the facility.
    (i) Introduction of a new waste stream,
    (ii) Suspected, unknown or non-routine chemicals,
    (iii) If an employee states that he/she is unfamiliar with a chemical,
    (iv) When any of the above listed indicators are met, an evaluation by the EHS department is required.
    (v) The program administrator and/or designee will rely on one or more of the following methods to conservatively estimate an end of service life for the selected chemical cartridge. The type of method used and results will be documented on the Change of Schedule form (Appendix C).
    (vi) Manufacturers Objective Data

(c) Initial evaluation will commence with an inquiry of the Manufacturers Objective Data. The program administrator will utilize the pre-existing information or available formulas.
    (i) In cases where data is not available for specific chemical cartridges, an approximation of the change out schedule will be made based on Romic's analytical air sampling data and the variables listed below:

1) Variation in concentrations
2) Accuracy of workplace concentrations measurements
3) Mixtures
4) Relative Humidity (Organic Compounds)
5) Relative Humidity (Inorganic Compounds)
6) Analogous Chemical Structures
7) Potential for contaminant migration through the carbon bed
8) Warning Properties

Section 12.07 OSHA Rules of Thumb

(a) In additional to the company prescribed change out schedule,
(b) OSHA has listed several rules of thumb that can be followed to further determine the chemical cartridge service life:
    (i) If the chemicals boiling point is >70°C (158°F) and the concentration is less than 200 PPM you can expect a service life of 8 hours at a normal work rate.
    (ii) Service life is inversely proportional to work rate.
    (iii) Reducing concentration by a factor of 10 will increase the service life by a factor of 5.

(iv) Humidity above 85% will reduce service life by 50%.

(c) Note: These OSHA generalizations should only be used in concert with one of the other methods of predicting service life for specific contaminants (See Appendix C).

(d) Relevance of data will be documented as part of the Appendix C: Chemical Cartridge selection process.

(e) In keeping with the intent of continuous effective communication and program evaluation employees will be required to provide their personal feedback as to the effectiveness of the cartridge selection and end of service life estimation. (See Appendix C)

(f) Information and updates to the Change Out Schedule are part of the Personal Protection Minimal Equipment List and are readily accessible to employees. Additional information is available through:
  (i) Written record as documented on Change Out Schedule Evaluation filed with the EHS Department.
  (ii) Listing of specific information will be detailed in the Personal Protection Minimal Equipment List and outlined by task to be performed.
  (iii) Through continuous training as outlined in Section X of this document. Romic will provide an understanding and general knowledge of how selections are made.
  (iv) Memo format when appropriate.

(g) Estimate worse case scenario and document information for employee use. Continuous review of routine chemicals will be presented in training as outlined in Section X.

(h) Once the chemical has been evaluated and a determination has been made an evaluation form is completed (See Appendix).

Section 12.08 Romic requires all cartridges to be marked with permanent ink when initially attached or removed from original sealed package. Cartridges shall be changed based on the most limiting factor below:

(a) Prior to Manufacture's recommended expiration date;
(b) When restriction of air flow has occurred as evidenced by increase effort by user;
(c) The cartridge is physically damaged (Dents, soiled, evidence or exposure to humidity)
(d) When damage to the cartridge housing is evident;
(e) When contaminate odor is detected - Although breakthrough is the last and least desirable means of detecting an exposure each employee must understand what the warning properties are for the chemicals they are handling.
(f) Spare filters are maintained to allow immediate change when required

Section 12.09 Identification of Filters and Cartridges

(a) All filters and cartridges shall be labeled and color-coded with the NIOSH approval label and that the label is not removed and remains legible. A change out schedule has been

developed to ensure these elements of the respirators remain effective.

(b) The Environmental, Health and Safety Department will assist departments in the evaluation and measurement of job hazards and ultimately recommend the type of cartridge and the duration it can be used.

Article XIII. WASTE TYPES POTENTIALLY ENCOUNTERED

Liquid: X Solid: X Sludge: X Gas: _____ Vapor: X

Section 13.01 It is expected the waste stream generated from the Romic facility closure may include materials common to analytical laboratories, solvents (halogenated and non-halogenated), industrial maintenance, hydrocarbon solvents, Flammable solvents, paint sludge, waxes, greases, ethylene glycol, dilute acetic acid solution, coolant oil, aqueous cleaning solutions and spent acids.

Article XIV. CHARACTERISTICS OF WASTE

Corrosive:	X	Ignitable:	X	Radioactive:	_____
Volatile:	X	Toxic:	X	Reactive:	_____
Unknown:	_____				

Article XV. ROUTES OF EXPOSURE

(a) Inhalation	X	Skin/Eye Contact	X
(b) Ingestion	X	Skin Absorption	X

Article XVI. Fire and Explosion Hazards

There is the potential for some waste streams to be ignitable, only non-sparking tools will be used in drum or container management. All possible sources of ignition should be eliminated from the area.

Section 16.01 Deconstruction activity will require the issue of a "Hot Work Permit."

Article XVII. Physical Hazards

Physical hazards such as slips, trips, and falls may occur. Workers must walk cautiously at a site to avoid tripping, especially when uneven terrain is present. Falls are more serious when they occur from heights. Extra precautions must be taken if guardrails or railings are absent. Ladders used for access to a high place should be securely lashed or otherwise fastened at the top to prevent sliding and the feet must be on a firm and level base. Vehicles used at a site can strike workers. While driving in reverse, the operator usually has a more limited field of view than while driving forward and must observe extra caution. Such vehicles must be equipped with a backup alarm to warn workers that the vehicles are moving in reverse.

Section 17.01 Employees prior to packaging and handling materials shall review material compatibility. Non-compatible materials shall be segregated immediately, thus reducing the risk of chemical reactions.

Section 17.02 Accidents in manual handling of materials are primarily the result of unsafe working habits--improper lifting, carrying too heavy a load, incorrect gripping, or failing to wear personal protective equipment. These may be avoided by testing the weight of an object before attempting to lift and carry it. If it is too heavy, get help, and if possible, use mechanical lifting aids.

Section 17.03 **Avoiding Back Injuries**
The proper method for lifting is:

- Get a good footing.
- Place feet about shoulder width apart.
- Bend knees to pick up load. Never bend from waist.
- Keep back straight.
- Get a firm hold. Grasp opposite corners of the load, if possible.
- Keep the back as upright as possible.
- Lift gradually by straightening the legs--don't jerk the load.
- Keep the weight as close to the body as possible.
- When changing directions, turn the entire body, including the feet.
- Don't twist the body.

Article XVIII. Electrical Hazards

Section 18.01 As portions of the waste stream may contain batteries or capacitors, Romic employees shall exercise extreme caution in the handling of such items. Electric leads and posts should be taped over to prevent arching by stray tools or equipment.

Section 18.02 Any electrical power tools must be connected to GFCI (ground fault circuit interrupter) protected circuits. All power cords must be inspected for damage prior to use.

Article XIX. Heat/Cold Stress

Section 19.01 Wearing PPE also puts a worker at a considerable risk of developing heat stress. The attached table, Signs and Symptoms of Heat Stress, describes the signs and symptoms of heat stress. This can result in health effects ranging from heat fatigue to serious illness or death. Consequently, regular monitoring and other precautions are vital.

Section 19.02 For workers wearing standard work clothes, recommendations for monitoring and work/rest schedules are those approved by ACGIH and NIOSH. Workers wearing semipermeable PPE or impermeable PPE should be monitored when the temperature in the work area is above 70□F. To monitor the worker, the following should be measured:

Section 19.03 Heart rate--The radial pulse should be counted during a 30-second period as early as possible in the rest period.

Section 19.04 If the heart rate exceeds 110 beats per minute at the beginning of the rest period, the next work cycle should be shortened by one third and the rest period should be kept the same.

Section 19.05 If the heart rate still exceeds 110 beats per minute at the next rest period, the following work cycle should be shortened by one third.

Section 19.06 Oral temperature--A clinical thermometer (3 minutes under the tongue) or similar device should be used to measure the oral temperature at the end of the work period (before drinking).

Section 19.07 If the oral temperature exceeds 99.6 degrees F (37.6 degrees Celsius (°C)), the next work cycle should be shortened by one third, without the rest period being changed.

Section 19.08 If the oral temperature still exceeds 99.6 degrees F (37.6 degrees C) at the beginning of the next rest period, the following work cycle should be shortened by one third.

Section 19.09 A worker should not be permitted to wear a semipermeable or impermeable garment when his/her oral temperature exceeds 100.6 degrees F (38.1 degrees C).

Section 19.10 Initially, the frequency of monitoring depends on ambient temperature (see attached table, Suggested Frequencies of Physiological Monitoring for Fit and Acclimatized Workers). The length of the work cycle is determined by the frequency of physiological monitoring described above.

Section 19.11 Proper training and preventive measures will help avert serious illness and loss of work productivity. Preventing heat stress is particularly important, because once someone suffers from heat stroke or heat exhaustion, that person may be predisposed to additional heat injuries. To avoid heat stress, the following steps should be taken:

Section 19.12 Work schedules should be adjusted.

Section 19.13 Shelter (air-conditioned, if possible) or shaded areas should be provided to protect personnel during rest periods.

Section 19.14 Workers' body fluids should be maintained at normal levels to ensure that the cardiovascular system functions adequately. Daily fluid intake must approximately equal the amount of water lost in sweat--i.e., 8 fluid ounces (0.23 liter) of water must be ingested for approximately every 8 ounces (0.23 kilogram) of weight lost. The normal thirst mechanism is not sensitive enough to ensure that enough water

will be drunk to replace lost sweat. When heavy sweating occurs, the worker should be encouraged to drink more. The following strategies may be useful:

Section 19.15 Water temperature should be maintained at 50°F to 60°F (10° to 15.6°C).

Section 19.16 Small disposable cups that hold about 4 ounces (0.1 liter) should be provided.

Section 19.17 SIGNS AND SYMPTOMS OF HEAT STRESS

- **Heat rash** may result from continuous exposure to heat or humid air.

- **Heat cramps** are caused by heavy sweating with inadequate electrolyte replacement. Signs and symptoms include:

- Muscle spasms
- Pain in the hands, feet, and abdomen.

- **Heat exhaustion** occurs from increased stress on various body organs, including inadequate blood circulation due to cardiovascular insufficiency or dehydration. Signs and symptoms include:

  - Pale, cool, and moist skin
  - Heavy sweating
  - Dizziness, fainting, and nausea.

- **Heat stroke** is the most serious form of heat stress. Temperature regulation fails, and the body temperature rises to critical levels. Immediate action must be taken to cool the body before serious injury or death occurs. Competent medical help must be obtained. Signs and symptoms are:

  - Red, hot, and unusually dry skin
  - Lack of or reduced perspiration
  - Dizziness and confusion

- Strong, rapid pulse, and coma.

- Have workers drink 16 ounces (0.5 liter) of fluid (preferably water or diluted drinks) before beginning work. Urge workers to drink a cup or two every 15 to 20 minutes, or at each monitoring break. A total of 1 to 1.6 gallons (4 to 6 liters) of fluid per day are recommended, but more may be necessary to maintain body weight. Weigh workers before and after work to determine if fluid replacement is adequate.

- Encourage workers to maintain an optimal level of physical fitness. Where indicated, acclimatize workers to site work conditions.

- Provide cooling devices to aid natural body heat exchange during prolonged work or severe heat exposure.

- Train workers to recognize, identify, and treat heat stress.

Article XX. TABLE

SUGGESTED FREQUENCY OF PHYSIOLOGICAL MONITORING FOR FIT AND ACCLIMATIZED WORKERS[b]

Adjusted Temperature	Normal Work Ensemble	Impermeable Ensemble
90°F (32.2°C) or above	After each 45 minutes of work	After each 15 minutes of work
87.5°-90°F (30.8°-32.2°C)	After each 60 minutes of work	After each 30 minutes of work
82.5°-87.5°F (28.1°-30.8°C)	After each 90 minutes of work	After each 60 minutes of work
77.5°-82.5°F (25.3°-28.1°C)	After each 120 minutes of work	After each 90 minutes of work
72.5°-77.5°F (22.5°-25.3°C)	After each 150 minutes of work	After each 120 minutes of work

[a]Calculate the adjusted air temperature (ta adj) by using this equation: ta adj °F = °F + (13 x % sunshine). Measure air temperature (ta) with a standard mercury-in-glass thermometer, with the bulb shielded from radiant heat. Estimate percent sunshine by judging what percent of the time the sun is not covered by clouds that are thick enough to produce a shadow (100% sunshine = no cloud cover and a sharp, distinct shadow; 0% sunshine = no shadows).
[b]For work levels of 250 kilocalories/hour.
[c]A normal work ensemble consists of cotton overalls or other cotton

Article XXI. Cold Stress

Section 21.01 Exposure to cold/low temperatures is not anticipated but may occur during field activities. During the day to day fieldwork, the Project Manager, and/or Site Safety Officer and workers will be alert for signs and symptoms of could stress (hypothermia).

Section 21.02 The most common cause is due to prolonged exposure to cold while wearing inadequate clothing. This may occur when individuals are requried to wear chemical resistant suits. There may not be adequate insulation under the suit or the worker may be required to undress in an unheated area.

Section 21.03 The Site Safety Officer will monitor the ambient air temperature using a thermometer in the support zone. At temperatures below 400F, actual temperature or corrected for wind chill, the most current published ACGIH cold stress standard will be followed.

Section 21.04 The crew members will be observed for the following sign and symptoms:

- Pain in the extremities
- Uncontrolled shivering
- Reduced responsiveness
- Discoloration of appendages

Section 21.05 Any team member who exhibits these signs will be monitored for cold stress. Any individual with an oral temperature of less than 97oF will be taken immediately from outside into a warm shelter.

Article XXII. Noise Hazards

Section 22.01 Hearing protection is required for work performed adjacent to operating heavy equipment or other noise generating sources.

Article XXIII. Biological Hazards

Section 23.01 Biological hazards are not anticipated but may include venomous snakes, insects, animals (rabid) and allergenic plants. Information attached in the Appendix should be reviewed by site personnel prior to beginning work.

Article XXIV. Permits

Section 24.01 All applicable permits must be completed prior to work beginning.

Section 24.02 Determination will be made at time of closure activity

Section 24.03 Equipment, Tank, and Piping Removal – Locating

Section 24.04 Prior to initiating removal operations the equipment, tanks and associated piping will be located by site reconnaissance and the supplied maps of the site. The locations will be evaluated to determine what measures, if any, are to be taken to prevent damage to existing structures, appurtenances, or utilities.

Section 24.05 Before any removal commences, the surface area will be cleared of any surface debris.

Section 24.06 Gravity Draining Piping

Section 24.07 Each corrosive line will be drained and if necessary flushed using potable or recycled water until the pH measure of effluent is greeter than 6 units or less than 8 units. Influent lines will be flushed from the farthest upstream location. Low points in the lines will then be checked for residual liquids.

Article XXV. Vehicle / Equipment Operation

Section 25.01 The work crew can effective control the safety hazard associate with the operation of equipment, including heavy equipment, such as forklifts and trucks, if a constant awareness of these hazards is maintained.

Section 25.02 The vehicle operator shall be the leader in using proper personal safety gear, and set an example in adhering to the rules, and regulations that are set forth for the project. The vehicle operator shall enforce the use of proper personal protective equipment, and take appropriate corrective action when proper personal protective equipment is not being used.

Section 25.03 The vehicle operator, and crew should understand that proper maintenance of tools, and equipment, and general housekeeping on the vehicle and will provide the environment to promote, and enforce safety.

Section 25.04 The vehicle operator shall inspect the vehicle and document this inspection using the "Safety/PM Inspection Record" in Attachment 1.

Section 25.05 The vehicle operator shall check that all gauges, warning lights, and control levers are functioning properly, and listen for unusual sounds on each starting of an engine.

Section 25.06 The vehicle operator shall assure that there is a fully stocked first-aid kit and OSHA/DOT - approved fire extinguisher on the vehicle.

Section 25.07 The vehicle operator (and as many crew members as possible) shall be well trained, and capable of using first-aid kits, fire extinguishers, and all other safety devices, and equipment.

Section 25.08 The vehicle operator shall inspect all hoses, lines, joints and couplings for damage, abrasion, gasket integrity or signs of previous leakage prior to every use.

Section 25.09 Always block the wheels, and set hand brakes before working a vehicle.

(a) Ensure transfer and suction lines are empty and depressurized prior to disconnecting hoses or couplings. Use spill control devices (buckets or drip pans) beneath joints or connections to contain leakage or remnant product.

Section 25.10 Never weld or cut on or near a fuel tanks.

Section 25.11 Any employee shall report promptly any worn, defective, or unsafe items which is observed to the vehicle operator and the Site Health and Safety Operator.

Section 25.12 When inspecting hoses, stand up wind and above the lowest opening to prevent inadvertent contact with remnant product. Drip pans should be used to collect materials.

Section 25.13 Safety During Waste Handling and Transfer Operations

Section 25.14 On box trailers or lab-pack vans, drum dollies should be used to transport full or partially filled drums.

Section 25.15 On box trailers and lab-pack vans bracing bars should be used to secure drums during transport.

Section 25.16 During bulk liquid transfer operations, all personnel in the immediate proximity of the vehicle shall be wear PPE equivalent to the vehicle operator.

Section 25.17 During bulk liquid transfers ensure the correct tank, sump, valve or connection has been identified.

Section 25.18 On vacuum or tank trucks, vehicle operator shall remain at the control station at all times when transferring materials.

Section 25.19 On vacuum or tank trucks without adequate railings, ensure fall protection is used when climbing.

Section 25.20 If it is necessary to operate vehicles within an enclosed area, make certain that exhaust fumes are conducted out of the area.

Article XXVI. Elevated Platforms, walkways and scaffolding

Section 26.01 Work areas, platforms, walkways, scaffolding, and other access ways should be kept free of materials, debris, and obstructions, and substances such as ice, grease, or oil that could cause a surface to become slick or otherwise hazardous.

Article XXVII. Safe Use of Hand Tools

Section 27.01 When a tool becomes damaged, either repair it before using it again or remove it from service.

Section 27.02 Keep all tools cleaned, and stored in an orderly manner when not in use.

Article XXVIII. Heavy Equipment

Section 28.01 Assure that equipment furnished for use on this site is maintained in safe operating condition, and operated by qualified operators. Cranes, pressure vessels, and large earth moving equipment shall have valid certificates, and logs of inspection, and maintenance.

Article XXIX. Slip, Trip and Fall Hazards

Section 29.01 While it is difficult to prevent slip-trip-fall hazards, risk of injury will be minimized by implementing proper site control measures such as daily safety meetings, proper footwear, and by keeping the work area free of obstructions.

Article XXX. Other Hazards

Section 30.01 **TOXIC SNAKE AND INSECT BITES AND PLANTS**

(a) Poisonous Snakebites

(i) General

(ii) Acute fear and anxiety aggravate reactions from snakebite. Other factors that affect the severity of local and general reaction from poisonous snakebite include: the amount of venom injected and the speed of absorption of venom into the victim's circulation; the size of the victim; protection from clothing, including shoes and gloves; quick antivenin therapy; and location of the bite.

(b) First Aid Procedure

(i) The objective of first aid is to reduce the circulation of blood through the bite area, to delay absorption of venom, to prevent aggravation of the local wound, and to sustain respiration.

(ii) The most important step is to get the snakebite victim to the hospital quickly. Meanwhile, take the following first aid measures:

(iii) Keep the victim from moving around.

(iv) Keep the victim as calm as possible and preferably in a lying position.

(v) Immobilize the bitten extremity and keep it at or below heart level. If the victim can reach a hospital within 4 to 5 hours and if no symptoms develop, no further first aid measures need be applied.

(vi) If mild-to-moderate symptoms develop, apply a constricting band 2 to 4 inches above the bite, but not around a joint (the elbow, knee, wrist, or ankle) and not around the head, neck, or trunk. The band should be 3/4 to 1 1/2 inches wide, not thin like a rubber band. The band should be snug but loose enough for a finger to be slipped underneath. Watch out for swelling. Loosen the band if it becomes too tight, but do not remove it. Periodically check the pulse in the extremity beyond the bite to insure that the blood flow has not stopped.

(vii) If severe symptoms develop, make an incision and apply suction immediately. Apply a constricting band, if this has not already been done, and make a cut in the skin through the fang mark(s). Use a sharp, sterilized knife. Cuts should be 1/2 inch long, extending over the suspected venom deposit point. (Because a snake strikes downward, the deposit point is usually lower than the fang mark.) Cuts should be made along the long axis of the limb. Do not make cross-cut incisions. Do not make cuts on the head, or trunk. Apply suction with a suction cup for 30 minutes. If a suction cup is not available, use the mouth. There is little risk to the rescuer who uses his mouth, but it is recommended that the venom not be swallowed and that the mouth be rinsed out.

(viii) If the hospital is not close, that is, if it cannot be reached in 4 or 5 hours, take the following measures:

(ix) Keep trying to obtain professional care, either by transporting the victim to a place where medical care is available or by using an emergency communications system to obtain medical advice.

(x) If no symptoms develop, keep trying to reach the hospital and give the general first aid described above.

(xi) If any symptoms at all develop, apply a constricting band, make incisions, and apply suction immediately, as described above in steps 4 and 5.

(xii) Several other factors must be considered in cases of snakebite:

(xiii) Shock. Keep the victim lying down and comfortable, and maintain his or her body temperature.

(xiv) Breathing and heartbeat. If breathing stops, give mouth-to-mouth resuscitation. If breathing stops and there is no pulse, perform cardiopulmonary resuscitation (CPR) if you have been trained to do so.

(xv) Identifying the snake. If you can kill the snake without risk or delay, bring it to the hospital for identification, but exercise extreme caution in handling the snake.

(xvi) Cleaning the bitten area. You may wash the bitten area with soap and water and blot it dry with sterile gauze. You may apply dressings and bandages, but only for a short period of time.

(xvii) Medicine to relieve pain. Do not give the victim alcohol, sedatives, aspirin, or any medicine containing aspirin. Some painkillers, however, may be given. Consult a doctor or other medical personnel for specific medications that may be used.

(xviii) Snakebite kits. Keep a kit accessible for all outings in primitive areas or areas known or suspected to snake infested.

(xix) It is not recommended that cold compresses, ice, dry ice, chemical ice packs, spray refrigerants, or other methods of cold therapy be used in the first aid treatment of snakebite.

Section 30.02 Other Poisonous Bites

(a) Spiders

(i) Spiders in the United States are generally harmless, with two notable exceptions: the Black Widow spider (Latrodectus Mactans) and the Brown Recluse or violin spider (Lox Osceles Reclusa).

(ii) The symptoms of a Black Widow spider bite are: slight local reaction, severe pain produced by nerve toxin, profuse sweating, nausea, painful cramps in abdominal muscles, and difficulty in breathing and speaking. Victims recover in almost all cases, but an occasional death is reported. The bite of a Black Widow spider is the more painful and often the more deadly of the two.

(iii) Field personnel should exercise caution when lifting covers off manholes or sumps, or rummaging through wood, rock, or brush piles, etc. since both the Black Widow and Brown Recluse spiders can typically be found in these areas.

(b) General First Aid for Poisonous Insect Bites:

(i) Minor Bites and Stings

(ii) Cold applications.

(iii) Soothing lotions, such as calamine.

(c) Severe Reactions

(i) Give artificial respiration if indicated.
(ii) Apply a constricting band above the injection site on the victim's arm or leg (between the site and the heart). Do not apply tightly. You should be able to slip your index finger under the band when it is in place.
(iii) Keep the affected part down, below the level of the victim's heart.
(iv) If medical care is readily available, leave the band in place; otherwise, remove it after 30 minutes.
(v) Apply ice contained in a towel or plastic bag, or cold cloths, to the site of the sting or bite.
(vi) Give home medicine, such as aspirin, for pain.
(vii) If the victim has a history of allergic reactions to insect bites or is subject to attacks of hay fever or asthma, or if he or she is not promptly relieved of symptoms, call a physician or take the victim immediately to the nearest location where medical treatment is available. In a highly sensitive person, do not wait for symptoms to appear, since delay can be fatal.
(viii) In case of a bee sting, remove and discard the stinging apparatus and venom sac.

Article XXXI. Tickborne Diseases

Section 31.01 Lyme Disease
Lyme disease is an illness caused by a bacterium which may be transmitted by the bite of a tick (Ixodes Dammini), commonly referred to as the "Deer Tick". The tick is about the size of a sesame seed, as distinguished from the Dog Tick, which is significantly larger. The Deer Tick is principally found along the Atlantic coast, living in grassy and wooded areas, and feeds on mammals such as mice, shrews, birds, raccoons, opossums, deer, and humans. Not all ticks are infected with the bacterium, however. When an infected tick bites, the bacterium is passed into the bloodstream of the host, where it multiplies. The various stages and symptoms of the disease are well recognized and, if detected early, can be treated with antibiotics.

Section 31.02 Removal of ticks is best accomplished using small tweezers. Do not squeeze the tick's body. Grasp it where the mouth parts enter the skin and tug gently, but not firmly, until it releases its hold on the skin. Save the tick in a jar labeled with the date, body location of the bite, and the place where it may have been acquired. Wipe the bite thoroughly with an antiseptic and seek medical attention as soon as possible.

Section 31.03 The illness typically occurs in the summer and is characterized by a slowly expanding red rash, which develops a few days to a few weeks after the bite of an infected tick. This may be accompanied by flu-like symptoms along with headache, stiff neck, fever, muscle aches, and/or general malaise. At this stage treatment by a physician is usually effective; but, if left alone, these early symptoms may disappear and more serious problems may follow. The most common late symptom of the untreated disease is arthritis. Other problems that

may occur include meningitis and neurological and cardiac abnormalities. It is important to note that some people do not get the characteristic rash but progress directly to the later manifestations. Treatment of later symptoms is more difficult than early symptoms and is not always successful.

Section 31.04 When in an area suspected of harboring ticks (grassy, bushy, or woodland area) the following precautions can minimize the changes of being bitten by a tick:

(a) Wear long pants and long-sleeved shirts that fit tightly at the ankles and wrists.
(b) Wear light colored clothing so ticks can be easily spotted.
(c) Wearing tick repellents may be useful.
(d) Inspect clothing frequently while in tick habitat.
(e) Inspect your head and body thoroughly when you return from the field.
(f) Remove any attached ticks by tugging with tweezers where the tick's mouth parts enter the skin. Do not squeeze or crush it.

Section 31.05 Other Tickborne Diseases

(a) Ticks transmit several other diseases, most of which are rare and occur only in specific areas. Babesiosis occurs mainly in the Cape Cod area and eastern Long Island. Colorado tick fever is similarly regional and occurs only among those who live or work at altitudes above 4,000 feet.

Article XXXII. Poisonous Plants

Section 32.01 Characteristic Reactions
The majority of skin reactions following contact with offending plants is allergic in nature and are characterized by general symptoms of headache and fever, itching, redness, and a rash.

(a) Some of the most common and most severe allergic reactions result from contact with plants of the Poison Ivy group including Poison Oak and Poison Sumac. the most distinctive features of poison ivy and Poison Oak are their leaves, which are composed of three leaflets each. Both plants also have greenish-white flowers and berries that grow in clusters. Such plants produce a severe rash characterized by redness, blisters, swelling, and intense burning and itching. The victim can also develop a high fever and become very ill. Ordinarily, the rash begins within a few hours after exposure, but it may be delayed for 24 to 48 hours.

Section 32.02 First Aid Procedure

(a) Remove contaminated clothing.
(b) Wash all exposed areas thoroughly with soap and water, followed by rubbing alcohol.
(c) Apply calamine or other soothing skin lotion if the rash is mild.
(d) Seek medical advice if a severe reaction occurs, or if there is a known history of previous sensitivity.

Article XXXIII. HAZARD EVALUATION

Hazard evaluation is the process of determining the impact of personnel or public health during closure implementation. Once the presence of chemicals or hazards agents has been identified, the associated hazards can be evaluated. The degree of hazard is due to a substance's inherent characteristics combined with the risk of exposure. Hazard evaluation is usually done by referring to standardized reference sources for data and guidelines on permissible levels of exposure.

Article XXXIV. CHEMICAL AND PHYSICAL PROPERTIES OF HAZARDOUS SUBSTANCES

The exposure limits, recognition qualities, acute and chronic effects, and first aid treatments for the hazardous chemicals expected to be present during closure activities in Table 1 (Exposure Limits and Recognition Qualities) and Table 2 (Health Hazards and First Aid). As stated previously, the ranges of compounds that may be encountered are wide and varied. PPE used for this project will be consistent with the hazards of those materials likely to be encountered.

Section 34.01 No entries into confined spaces or excavations are anticipated based on current scope of work. ROMIC EMPLOYEES AND ITS SUBCONTRACTORS ARE PROHIBITED FROM ENTERING CONFINED SPACES OR EXCAVATIONS UNDER THIS HASP.

Section 34.02 Tool and/or equipment decontamination will be conducted in accordance with procedures attached in the Appendix. Tool Decon will be conducted in accordance with EPA Region II Standard Operating Procedures (the SOP is attached to this document). Disposable tools will be used wherever applicable.

Article XXXV. WORK LIMITATIONS

Section 35.01 In general, site closure activities will be conducted during daylight hours and will require all activities to be performed with no less than two personnel.

Article XXXVI. PERSONAL PROTECTIVE EQUIPMENT

The purpose of PPE is to shield or isolate individuals from the chemical, physical, and biological hazards that may be encountered on site. PPE is selected based upon standard criteria and procedures found in the "Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities," NIOSH, OSHA, USCG, and EPA, October 1985. This project will be conducted using the following levels of protection:

Section 36.01 PPE Selection factors.

(a) Chemical Hazards. The work tasks associated with Romic's business line present a potential to come in contact with a variety of hazards related to our industry such as toxic, corrosive, flammable, and small quantities of reactive materials. Depending on the chemicals present, any combination of hazards may exist.

(b) Physical Environment. Chemical exposure can happen anywhere: at the facility, in transit, or at a customer site. It may occur either indoors or outdoors; the environment may be extremely hot, cold, or moderate; the exposure site may be relatively uncluttered or rugged, presenting a number of physical hazards; chemical handling activities may involve entering confined spaces, heavy lifting, climbing ladders or crawling on the ground. The choice of ensemble components must account for these conditions.

(c) Duration of Exposure. The protective qualities of Personal Protective Equipment components may be limited to certain exposure levels (e.g. material chemical resistance, air supply).

(d) The decision for ensemble use time must be made assuming the worst case exposure so that safety margins can be applied to increase the protection available to the worker.

(i) LEVEL A:

1) **Level A ensemble is not recommended for facility closure type activities.**

(ii) *LEVEL B:*

1) Liquid splash protective suit (meets NFPA 1992)
2) Pressure-demand, full-facepiece SCBA
3) Inner chemical-restraint gloves, chemical-restraint safety boots, two-way radio communications
4) Hard hat.
5) OPTIONAL: Cooling system, outer gloves
6) Protection Provided: Provides same level of respiratory protection as Level A, but less skin protection. Liquid splash protection, but no protection against chemical vapors or gases.
7) *Used When:* The chemical(s) have been identified but do not require a high level of skin protection. Initial site surveys are required until higher levels of hazards are identified. The primary hazards associated with site entry are from liquid and not vapor contact.
8) *Limitations:* Protective-clothing items must resist penetration by the chemicals or mixtures present. Ensemble items must allow integration without loss of performance.

(iii) LEVEL C:

1) Support Function Protective Garment (meets NFPA 1993)
2) Full-facepiece, air-purifying, canister-equipped respirator
3) Chemical restraint gloves and safety boots
4) Two-way communications system, hard hat
5) OPTIONAL: Faceshield, escape SCBA

6) *Protection Provided:* The same level of skin protection as Level B, but a lower level of respiratory protection. Liquid splash protection but no protection to chemical vapors or gases.
7) *Used When:* Contact with site chemical(s) will not affect the skin. Air contaminants have been identified and concentrations measured. A canister is available which can remove the contaminant. The site and its hazards have been completely characterized.
8) *Limitations:* Protective-clothing items must resist penetration by the chemical or mixtures present. Chemical airborne concentration must be less than IDLH levels. The atmosphere must contain at least 19.5% oxygen.

(iv) LEVEL D:

1) COVERALLS, SAFETY BOOTS/SHOES, SAFETY GLASSES OR CHEMICAL SPLASH GOGGLES
2) OPTIONAL: GLOVES, ESCAPE SCBA, FACE-SHIELD
3) *PROTECTION PROVIDED:* NO RESPIRATORY PROTECTION, MINIMAL SKIN PROTECTION.
4) *USED WHEN:* THE ATMOSPHERE CONTAINS NO KNOWN HAZARD. WORK FUNCTIONS PRECLUDE SPLASHES, IMMERSION, POTENTIAL FOR INHALATION, OR DIRECT CONTACT WITH HAZARD CHEMICALS.
5) *LIMITATIONS:* THIS LEVEL SHOULD NOT BE WORN IN THE HOT ZONE. THE ATMOSPHERE MUST CONTAIN AT LEAST 19.5% OXYGEN.

NOT ACCEPTABLE FOR CHEMICAL EMERGENCY RESPONSE

Section 36.02 Classification of Protective Equipment

(a) Listed below are the categories of Personal Protective Equipment available to employees and includes the following:
   (i) Non-encapsulating suits
   (ii) Gloves
   (iii) Boots
   (iv) Aprons
   (v) Coveralls
   (vi) Uniform
   (vii) Eye protection
   (viii) Head protection

Article XXXVII. EQUIPMENT SELECTION

The proper selection of the type of PPE is essential to the performance of the PPE as a barrier to chemicals. The selection of the proper chemical-resistant PPE begins with an evaluation of the job activities and procedures. Factors that influence the selection of proper PPE are:

(a) specific chemical(s) and type of chemical(s) to be used
(b) frequency and duration of chemical contact
(c) nature of contact (immersion and/or splash)
(d) concentration of chemical
(e) chemical compatibility
(f) temperature of chemical
(g) abrasion-resistance requirements
(h) puncture, snag, tear, and cut-resistance requirements
(i) flexibility requirements
(j) color requirements, e.g., to show contamination
(k) thermal protection -- to protect against heat and cold
(l) size
(m) comfort needs
(n) cost

Section 37.02 Non-encapsulating suits

(a) Romic provides protective equipment for full body splash protection. Options include tyvek, poly-coated tyvek, Kappler and Saranex full body suits. The type of material to be used is determined by the type of work. (See Minimum Safety Equipment List).

Section 37.03 Gloves

(a) Romic provides protective equipment for the hands of employees when required. Additional guidance on protecting the hands from chemicals, flame, heat, cold, abrasives, cuts, and electrical devices can be obtained by contacting the Health and Safety Manager or other department supervisors/managers.

(b) Wearing rings and watches shall be evaluated by supervisors and managers to identify potential hazards. Often, removing these items or wearing gloves can prevent fingers and arms from becoming caught in or on equipment.

Section 37.04 Boots

(a) Romic employees and contractors working in the active portion of the facility are required to wear approved foot protection.

(b) Approved footwear, made of leather or other equally firm material, shall be worn by all site workers. Tennis shoes, thin or soft-soled athletic shoes are not permitted.

(c) Open-toed sandals, slipper, or other similar shoes are not permitted while at Romic.

Section 37.05 Aprons

(a) Aprons are worn for additional splash protection and are designated for use during acid neutralization and pouring of corrosives.

Section 37.06 Coveralls

(a) Coveralls are provided as an alternative to the standard uniform and must be managed in the same manner as uniforms.

Article XXXVIII. ENIVORNMENTAL MONITORING

An ongoing monitoring program should be implemented to ensure safe operation at the site. Atmospheric monitoring of chemical hazards should be conducted using a combination of stationary sampling equipment, personal monitoring devices, and periodic area monitoring with direct-reading instruments. Where necessary, routes of exposure other than inhalation should be monitored. For example, skin swipe tests may be used to determine the effectiveness of personal protective clothing.

Section 38.01 Monitoring also includes continual evaluation of any changes in site conditions or work activities that could affect worker safety. When a significant change occurs, the hazards must be reassessed.

Section 38.02 Exposure monitoring will be required for this project. If required, the type, frequency, and details related to this monitoring will be determined by the Health and Safety Officer prior to closure activity commencing.

(a) ___X___ Explosimeter
(b) _____ Oxygen Meter
(c) _____ Hydrogen Sulfide Meter
(d) _____ Dust Meter
(e) _____ Photoionization Detector (PID)
(f) ___X___ Flame Ionization Detector (FID)
(g) _____ VOC Area Monitoring (tedlar bags)

Section 38.03 Only personnel who are familiar with the proper use and limitations of the instruments will perform exposure monitoring. Instruments will be calibrated prior to use in accordance with manufacturer's recommendations. A log of this calibration shall be maintained on the "Equipment Calibration Log Form" provided in the "FORMS" section of this HASP.

Section 38.04 The types of monitoring instruments used, as well as the action levels to upgrade personal protection are shown on Table 3, Hazard Monitoring Methods, Action Levels, and Protective Measures.

Article XXXIX. SITE WORK ZONES

To reduce the accidental spread of hazardous substances by workers from the contaminated area to the clean area, this Health and Safety Plan delineates zone at the site where differently types of closure activities will occur. The flow of personnel a month the zones will be controlled by a Safety Officer. The establishment of work zones ensures that : personnel are properly protected against the hazards present where they are working, work activities and contamination are confined to the appropriate areas, and personnel can be located and evacuated in an emergency.

Section 39.01 The work zones will be clearly marked with barricades/barricade tape (caution tape) and signs visible from all directions

Section 39.02 To prevent the accidental spread of contaminants during a closure activities, at a minimum, three zones will be delineated on the site for this project.

(a) *Exclusion Zone (EZ)* The exclusion zone will encompass the work area where materials are being packaged.
    (i) The size and shape of the exclusion zone will be determined by the conditions on the site, and will be large enough to encompass the potentially hazardous zone around the work site.
    (ii) Only authorized personnel may enter this area wearing the specified level of protection.
    (iii) The buddy system will be utilized whenever possible while work is being performed within the exclusion zone.

(b) *Contamination Reduction Zone (CRZ)* The contamination reduction zone will consist of a lane into and out of the EZ which will adequately accommodate decontamination station(s) as necessary.

(i) Only authorized personnel wearing the specified level of protection may enter this area.
(ii) Personnel decontamination station
(iii) Equipment decontamination station
(iv) Plastic sheeting on which to place and segregate reusable equipment
(v) Clearly marked trash barrels or drums with plastic liners for the placement and disposal of expendable items such as gloves and protective clothing.

(c) *Support Zone (SZ)* The support zone will be located beyond the CRZ and will include the remaining portions of the site.

(i) No specific project-related personal protective equipment (PPE) is required in this zone.
(ii) Eating, drinking and smoking will allowed only in this zone.
(iii) All non-essential personnel and person not directly involved in site work activities shall remain in the support zone at all times.

Article XL. DECONTAMINATION

This Health and Safety Plan establishes procedures for decontaminating personal protective equipment. Decontamination procedures must provide an organized process by which levels of contamination are reduced. The decontamination process consist of a series of procedures perform in a specific sequence. Each procedure should be performed at a separate station in order to prevent cross-contamination.

Section 40.01 A decontamination area should be located between the Hot Line (upwind boundary of the Exclusion Zone) and the Support Zone boundary.

Section 40.02 A personnel decontamination station (PDS) should be established.

Section 40.03 All personnel should proceed through the appropriate contamination reduction sequence upon leaving the contamination area.

Section 40.04 All protective gear should be left on site during any lunch break following decontamination procedures.

Section 40.05 Material Safety Data Sheets for chemicals used during decontamination procedures should be made available to those who are potentially exposed to these chemicals and should be attached to this health and safety plan.

Article XLI. Decontamination of Equipment

To the extent possible, measures should be taken to prevent contamination of sampling and monitoring equipment. Sampling devices may become contaminated; however, monitoring instruments, unless they are splashed, usually do not become contaminated. Once contaminated, it is difficult to clean instruments without damaging them. Any delicate instrument that cannot be decontaminated easily should have a bag taped and secured around it. Openings should be made in the bag for sample intake.

Section 41.01 Sampling Devices

(a) Sampling devices require special cleaning. Decontamination of all sampling equipment should be performed using an appropriate solvent or detergent followed by a clean water rinse.

Section 41.02 Tools

(a) Wooden tools are difficult to decontaminate because they absorb chemicals. They should be kept on site and handled only by protected workers. After use in a contaminated area, wooden tools should be discarded. For decontaminating other tools, an appropriate detergent or solvent should be used followed be a clean water rinse.

Section 41.03 Respirators

(a) Certain parts of contaminated respirators, such as the harness assembly and cloth components, are difficult to decontaminate. If grossly contaminated, they may have to be discarded. Rubber components can be soaked in soap and water and scrubbed with a brush. Persons responsible for decontaminating respirators should be thoroughly trained in respirator maintenance.

Section 41.04 Heavy Equipment

(a) Bulldozers, trucks, backhoes, bulking chambers, and other heavy equipment are difficult to decontaminate. Generally, they are washed with water under high pressure and/or accessible parts are scrubbed with detergent/water solution under pressure, if possible. In some cases, shovels, scoops, and lifts have been sand blasted or steamed. Particular care must be given to those components in direct contact with contaminants, such as tires and scoops.

Section 41.05 Sanitizing of Personal Protective Equipment

(a) Respirators, reusable protective clothing, and other personal articles not only must be decontaminated before being reused, but also must be sanitized. The inside of masks and clothing becomes soiled because of exhalation, body oils, and perspiration. The manufacturer's instructions should be followed to sanitize the respirator mask. If practical, protective clothing should be machine washed after a thorough decontamination; otherwise, it must be cleaned by hand.

Section 41.06 Persistent Contamination

(a) In some instances, clothing and equipment will become contaminated with substances that cannot be removed by normal decontamination procedures. A strong detergent (industrial grade) may be used to remove such contamination from equipment if it does not destroy or degrade the protective material. If persistent contamination is expected, disposable garments should be used.

Section 41.07 Disposal of Contaminated Materials

(a) All materials and equipment used for decontamination must be disposed of properly. Clothing, tools, buckets, brushes, and all other equipment that is contaminated must be secured in drums or other containers and labeled. Clothing not completely decontaminated on site should be secured in plastic bags before being removed from the site. Contaminated wash and rinse solutions should be contained by using step-in-containers (e.g., wading pool, buckets) to hold spent solutions. Another containment method is to dig a trench about 4 inches deep and line it with plastic. In both cases, the spent solutions should be transferred to drums, which should be labeled and disposed of with other substances on site.

Section 41.08 Minimal Decontamination

(a) Less extensive procedures for decontamination can be subsequently established when disposable clothing and equipment are used, the type and degree of contamination become known, or the potential for transfer is judged to be minimal by the Site Safety Coordinator in consultation with the Project Manager.

Section 41.09 Closure of the Personnel Decontamination Station

(a) All disposable clothing and plastic sheeting used during the operation should be double bagged, labeled, and either contained on site or removed to a client-approved disposal facility. Grossly contaminated protective clothing should be disposed of on site with the permission of the property owner. Cloth items should be bagged and removed from the site for final cleaning. All wash tubs, pails, containers, etc., should be thoroughly washed, rinsed, and dried prior to removal from the site.

Article XLII. HAZARD COMMUNICATION

Section 42.01 Material Safety Data Sheets for all spill response materials will be maintained as an attachment to this binder.

Article XLIII. HAZARDOUS MATERIALS SHIPPING

The shipping of identified hazardous materials shall be done in accordance with applicable DOT regulations, as appropriate. Romic will make the necessary arrangements with a Hazardous Waste Handler to generate a Waste Profile specific for each waste stream identified during

removal. These Profiles shall be made available at the time of closure activity.

Article XLIV. EMERGENCY INFORMATION

This Health and Safety Plan will address the procedures for responding to an emergency which requires immediate actions to prevent additional problems or harm to site personnel. In general, all closure activities present a degree of risk to the worker. Unpredictable events such as fire, chemical exposure, physical injury may occur and should be anticipated.

Section 44.01 LOCATION OF SITE RESOURCES

(a) Telephone: *Determination will be made at time of closure activity*

(b) Water Supply: *Determination will be made at time of closure activity*

(c) Toilet: *Determination will be made at time of closure activity*

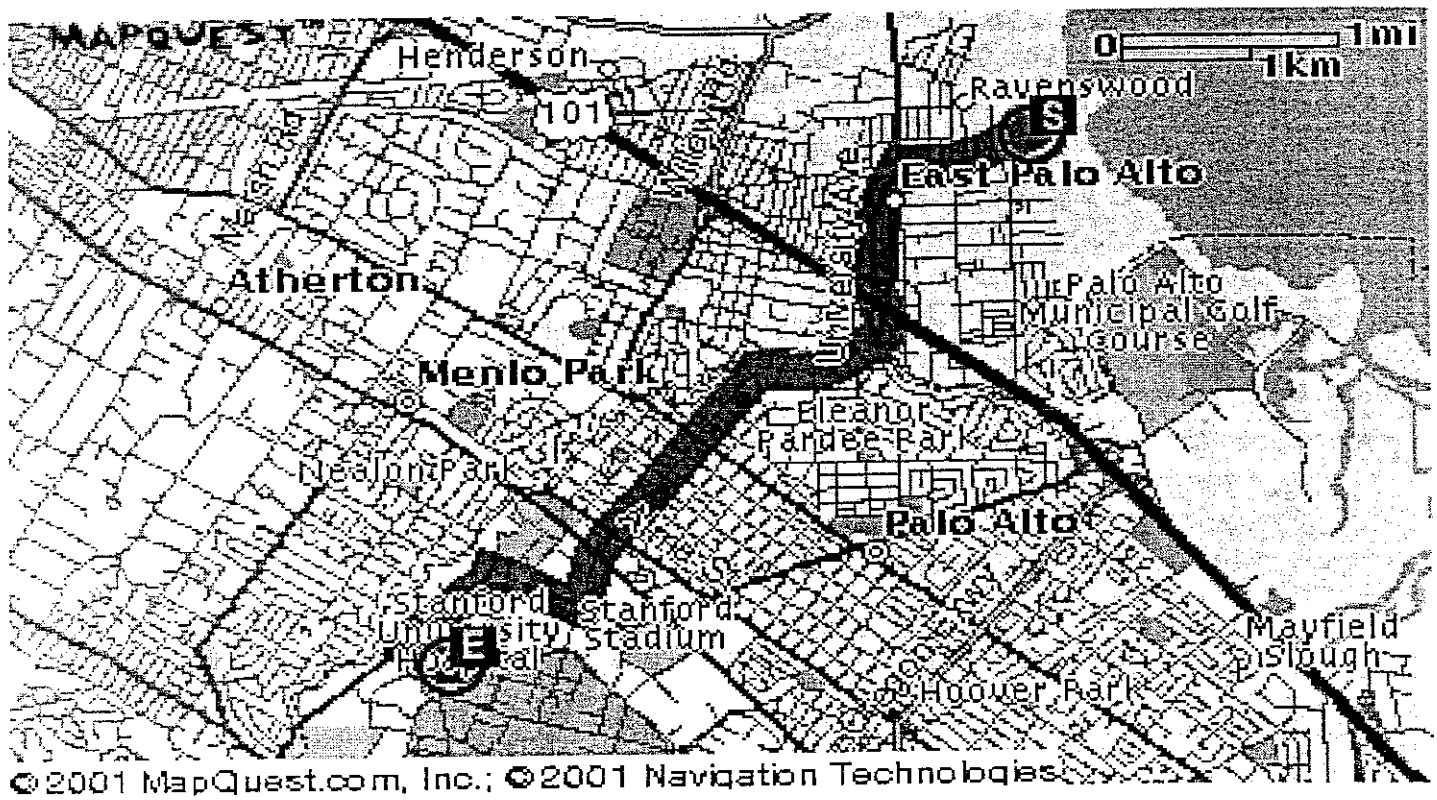
Section 44.02 LOCATION OF HOSPITAL/CLINIC

Section 44.03 **STANFORD MEDICAL CENTER**
300 PASTEUR DR.
PALO ALTO, CA. 94304

DIRECTIONS TO:

STANFORD MEDICAL CENTER
300 PASTEUR DR.
PALO ALTO, CA. 94304

1. Turn Left on UNIVERSITY AVE
2. UNIVERSITY AVE becomes UNIVERSITY AVENUE OVERHEAD
3. Stay straight to go onto UNIVERSITY AVE
4. Stay straight to go onto UNIVERSITY AVE/PALM DR
5. Stay straight to go onto PALM DR
6. Turn RIGHT onto ARBORETUM RD
7. Turn LEFT onto SAND HILL RD
8. Turn LEFT onto PASTEUR DR



Article XLV. A Hospital Location Map is attached as Figure 1:

Section 45.01 Alternate means for emergency communication

Section 45.02 Air horns blast.....will signal evacuation of area

Section 45.03 Vehicle horn blast.....signals evacuation of area

(a) Listed below are the emergency services organization that may be needed. Arrangements for using emergency organizations shall be made prior to closure activity implementation.

Contact	Person or Agency	Telephone No.
Police		911
Fire		911
Poison Control Center		(707) 424-8802
Ambulance		911
Hospital (directions to hospital listed below)		() ()
Romic Project Manager	*TBD*	*TBD*
Romic Health & Safety Officer	*TBD*	*TBD*

SUBCONTRACTOR STATEMENT OF COMPLIANCE FORM

INSERT HERE

HEALTH & SAFETY PLAN ACCEPTANCE FORM

INSTRUCTIONS: This form is to be completed by each of the Site Closure Employee prior to them having access to the project work site.

Project Name: Romic Environmental Technologies
SITE CLOSURE
East Palo Alto, CA

Project Number: ***To Be Determined***

Date: _____

I represent that I have read and understand the contents of the above Plan and agree to perform my work in accordance with it.

_____
Signed

_____
Print Name

Romic Environmental Technologies Corp.

CAD 009 452 657

East Palo Alto, California
TSD Facility

Attachment B to Closure Plan

Sampling and Analysis Plan

Revision 2
January 2004

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Tables and Figures are presented
in separate sections following the main body of the text.

TABLES

FIGURES

1. INTRODUCTION

This Sampling and Analysis Plan (SAP) presents procedures for the acquisition, analysis, and statistical evaluation of soil and liquid samples as part of the Romic Environmental Technologies Corp. ("Romic") Closure Plan. The sampling program will include the collection, analysis and evaluation of: 1) background level soil samples; 2) confirmatory soil samples; 3) equipment rinsate and quality control (QC) samples associated with both soil sampling events; 4) rinsate, wipe, and/or chip samples to verify decontamination of process equipment at the time of closure, and 5) washwater samples to characterize washwater for disposal. This plan refers to Romic's Quality Assurance Program Plan ("QAPP"). The QAPP can be found in Appendix C-3 to Section C of this Part B Application.

1.1. Project Background

The purpose of this SAP is to fulfill the "clean closure" confirmatory sampling and analytical requirements for the Romic facility. An overview of the closure process is shown on Figure 1.

1.1.1. Project Schedule

A project schedule is presented in Table App. 3-1 of the Closure Plan. Decontamination washwater and confirmatory soil sampling and analysis will occur at the time of facility closure.

1.2. Program Organization

The responsibilities of key program personnel are as follows:

Closure Project Manager – Responsible for overall project execution and quality. The Closure Project Manager is responsible for management of personnel and contractors assigned with the tasks of closing the Romic facility, including training of staff, oversight, and supervision of waste sampler. The Closure Project Manager will direct sampling activities and be responsible for assuring that representative samples are collected and delivered to the laboratory using appropriate chain-of-custody procedures.

Quality Assurance Manager – Responsible for reviewing, monitoring, auditing, and evaluating sampling activities and laboratory performance during closure activities. The Quality Assurance Manager is responsible for the quality of data gathered, oversight, assessments conducted in accordance with this plan, and maintenance of the program data base.

Analytical Department Manager – Responsible for managing all day-to-day analytical activities. The Analytical Department Manager will direct the Closure project process control, environmental and contract laboratories and will be responsible for the timely reporting of data to ensure uninterrupted operation of the closure activities.

All personnel will be responsible for identifying problems that may arise in the collection and reporting of program data and for overseeing the implementation of the necessary corrective actions. Personnel will inform the supervisors of any such problems and corrective actions. Problems that cannot be resolved immediately will be reported to the Quality Assurance (QA) Manager, who tracks, reviews, and verifies the effectiveness of the corrective actions.

2. DATA QUALITY OBJECTIVES AND CRITERIA FOR MEASUREMENT DATA

This section describes the technical approach for the sampling and analysis program, including the specific data quality objectives, sampling program design, and procedures for statistical analysis of the data. The details of the sampling design include the location, frequency and number of samples to be collected, and the analytes and analytical methods for each type of sample.

2.1. Data Quality Objectives

The objectives of this sampling and analysis program are to 1) identify areas where releases may have occurred, and indicate where affected soil may require removal, at the time of closure; 2) verify the effectiveness of decontamination of the process equipment used to manage hazardous wastes within the Romic facility; and 3) characterize decontamination wash water for disposal. Note that these data quality objectives are a subset of the Closure Performance Standards. The Closure Performance Standards are described in the Closure Plan.

The sampling and analysis described in this plan is, therefore, directed toward meeting these three objectives. The first is verifying there have been no releases of hazardous materials from the Romic facility during its years in operation. The second is determining that equipment used in the facility has been adequately cleaned during closure and the third is characterizing the wash water generated during demolition clean up for disposal. To address these objectives several decisions must be made. Has a release occurred, or not? Has the equipment been thoroughly cleaned? And, does the wash water used in equipment clean-up require disposal as a hazardous waste?

2.1.1. Confirmation - No Release Occurred

To determine if a release has occurred requires several data inputs. These inputs are background level soil characterization data to determine the levels of hazardous constituents within the local soil. To support the quality of the background level soil characterization data, sampling equipment rinsate samples will be collected and analyzed to verify the sampling equipment is being adequately decontaminated between sample collection locations. Confirmatory sampling and analysis data will also be required so the soil conditions can be compared to the background level conditions. The background level soil characterization will

only apply to inorganic chemicals (metals). The results from analysis of sampling equipment rinsates will also be needed to support the quality of the background level soil samping results. Background level soil samples will be collected and analyzed at the time of facility closure.

Background level soil sampling will be conducted in the area identified in Figure 4, Romic Background Level Soil Sampling Location, which represents the original soil conditions prior to the construction and operation of the Romic facility. The background level will be determined by calculating the mean of all samples collected plus two standard deviations. If confirmatory samples collected after demolition have concentrations of hazardous constituents above the 99th percentile of the backround level soil sampling concentration distribution, then Romic will conclude a release has occurred. The affected soil will be excavated, if required, to meet the specified cosure performance standard identified in the Closure Plan. Alternative remedial measures may also be used in lieu of excavation. These must be reviewed and approved by DTSC.

Confirmatory sampling will be conducted for organic hazardous constituents managed at the Romic facility. A release of organic hazardous constituents will be confirmed by a soil sample result above non-detect for all organic chemicals. Non-detect is set at least to the practical quantitation limits ("PQL") as established by Test Methods for Evaluating Solid Waste, SW-846, U.S. Environmental Protection Agency, Third Edition, November 1986 ("SW-846"). The use of non-detect for the "cleanup level" will require that the certified laboratory conducting the analysis of the confirmatory samples include the specific concentrations for non-detect for the specific instrument that was used. If confirmatory samples collected after demolition have concentrations of hazardous constituents above the non-detect level, then Romic will conclude a release has occurred and the affected soil will be excavated until confirmatory samples indicated hazardous constituent concentrations are below the non-detect level.

2.1.2. Confirmation – Adequate Decontamination of Equipment, Structures, and Buildings

Surface sampling will be conducted on all equipment, structures, and buildings that were in contact with hazardous constituents and have been decontaminated. Two types of surface sampling will be conducted at the Romic facility, wipe samples and chip samples. Wipe sampling will be used for equipment, structures, and buildings that have impervious surfaces (e.g. metal, epoxy coated, and/or vinyl lined equipment, structures, and buildings). The typical wipe sample size will be 100 cm^2 and will represent an area of no more than 100 m^2. Chip sampling will be used for equipment, structures, and buildings that have porous surfaces (e.g. wood, asphalt, or uncoated concrete structures, and buildings). The typical chip sample will be from the top 2 cm and will represent an area of no more that 100 m^2. The chip samples of concrete will be taken by use of a Roto-Hammer, core drill, or similar means.

The "cleanup level" will be that specified in the Closure Plan. If equipment meets the, it may be sold for use in other similar service. If the equipment can not meet the Closure Performance Standard, it will be decontaminated further or alternately, the equipment may be disposed of as hazardous waste.

For equipment (e.g. pumps, filters, etc.) where wipe or chip sampling is not considered feasible rinsate sampling may be conducted. To determine if equipment has been completely decontaminated requires visual examination of the equipment and, if necessary, collection and analysis of rinsate samples. All decontaminated equipment will be visually inspected for the presence of process residues. If process residues cannot be removed by repeated washing, then clean water will be poured over the affected area, collected and analyzed as an equipment rinsate sample. Visual examination, and if necessary, collection of rinsate samples to confirm equipment is decontaminated will be conducted on all equipment used to process potentially hazardous materials. If hazardous constituents are detected in the rinse water samples at concentrations exceeding the Closure Perfiormance Standard, then Romic will conclude the equipment needs further, more rigorous decontamination, prior to leaving the equipment in place. After this additional decontamination, if visual inspection indicated process residues remain on the equipment, an additional rinsate sample will be collected and analyzed to evaluate whether or not the equipment has been completely decontaminated. Alternately, the equipment may be disposed of as hazardous waste.

2.1.3. Wash Water Characterization for Disposal

To characterize the equipment decontamination wash water for disposal will require sampling and analyzing the wash water to determine if it exhibits the characteristics of toxicity or corrosivity. All equipment decontamination wash water will be sampled and analyzed prior to onsite treatment or shipment off site for disposal. If the wash water exhibits the characteristics of toxicity or corrosivity, or if it is contains or is mixed with listed hazardous waste, then it will be disposed of as a hazardous waste. If the wash water does not exhibit the characteristics of toxicity and corrosivity, and does not contain or is mixed with listed hazardous waste, then it will be disposed of as a non-hazardous waste.

2.2. Data Quality Indicators

Data quality indicators for the program include "PARCC" (precision, accuracy, representativeness, completeness, and comparability) goals, and level of confidence requirements, as described in the following subsections.

2.2.1. Precision

Precision refers to the degree of agreement between duplicates expressed as relative percent difference (RPD). RPD is calculated by the following equation:

$$RPD = \frac{|D_2 - D_1|}{\left[\frac{(D_1 + D_2)}{2}\right]} \times 100\%$$

Where: D_1 is the value of the first sample result

D_2 is the value of the second sample result

Precision criteria are based on an evaluation of potential field and laboratory performance on samples of similar matrices.

2.2.2. Accuracy

Accuracy refers to the agreement between the amount of the analyte measured by the test method and the amount actually present expressed as percent recovery (%R) of surrogates and matrix spikes. Percent recoveries are calculated by the following equations:

Where: Q_a is the quantity added to the sample

Q_d is the quantity recovered during analysis

$$\text{Surrogate } \%R = \frac{Q_d}{Q_a} \times 100\%$$

Where: SA is the amount of spike added

SR is the sample result

SSR is the spiked sample result

$$\text{Matrix Spike } \%R = \frac{SS - SR}{SA} \times 100\%$$

Like precision, accuracy criteria are based on an evaluation of potential laboratory performance on samples of similar matrices.

2.2.3. Representativeness

Representativeness is the degree to which the sample data represent a characteristic of the measured population. It is a qualitative parameter most influenced by the design and effectiveness of the sampling program and the proficiency of the sampling personnel. The procedures specified in this plan are designed to assure representative samples are collected and handled in a manner that assures the results from analysis of the samples correctly characterize the media sampled.

2.2.4. Completeness

Completeness is expressed as the percentage determined from the number of acceptable results compared to number of expected results. Where necessary, samples will be reanalyzed, or if insufficient sample material remains, additional samples will be collected and analyzed to meet this requirement.

The precision, accuracy, representativeness, and completeness objectives for this sampling program are shown in Table 1. For this sampling program, laboratory precision will be ensured through the analysis of laboratory duplicate samples and the total precision of the sampling and analysis process will be assessed by the collection and analysis of field duplicate samples, as described in Section 4.2. Analytical accuracy will be ensured through the use of matrix spike samples, described in Section 4.1.3. Representativeness of the soil samples will be ensured through the use of: 1) a randomly generated sample grid, 2) a statistical assessment of the adequacy of the number of samples, and 3) consistent sampling procedures. Collecting a statistically significant number of samples will also ensure completeness.

2.3. Sampling Design

This section describes the sampling program design, including the technical approach, the sample quantities and locations, and the analytical program.

2.3.1. Technical Approach

A schematic overview of the soil sampling and analysis program is shown on Figure 2. An initial set of background level soil samples will be collected, as part of the closure process. Confirmatory samples will be collected, as part of the closure process. The background level soil samples will be used to determine baseline concentrations of the inorganic constituents of concern. These baseline concentrations will be used as inorganic constituent "cleanup levels" for determining whether a release has occurred at the time of closure, that is, they will comprise the closure performance standards for site soil.

The confirmatory soil samples will be collected at the time of closure of the Romic facility where there has been suspected or confirmed loss of secondary containment, or where there is other evidence that a release to underlying or adjacent soils may have occurred. The results of the confirmatory samples will be compared to the closure performance standards (cleanup levels) established based on the background level soil samples. The confirmatory samples will be collected and analyzed in a manner identical to that of the background level soil samples.

If the evaluation indicates the confirmatory samples exceed the cleanup levels, each area where an exceedance occurs will be over-excavated. The excavation will extend horizontally to approximately 2 feet beyond the limits of the impacted area. The excavation will extend vertically to an elevation of 2 feet below the elevation of the sample exceeding cleanup levels.

An additional sample will then be collected from the bottom of the over-excavation. This process will be repeated as necessary until all areas meet the cleanup levels.

Three types of water samples will also be collected for verification purposes during closure. The first type of water samples to be collected are those needed to verify successfully cleaning of sampling equipment. The second type will be collected from process equipment to verify the effectiveness of the decontamination processes prior to releasing equipment or materials from the site. The third type of water sample will be decontamination wash water collected to characterize the water for disposal.

2.3.2. Sample Locations and Quantities

The background level soil samples will be collected from grids separately established in the area as shown on Figures 4, Romic Background Level Soil Sampling Location. Figure 5, Guide to Establishing Sampling Grid, provides a guide for establishing grids. The origin of the grid will be a random point generated as described in Table 2, Sampling Grid Design.

The background level soil samples will be collected at the surface of the site, 1 m, and 2 m below the surface. Confirmatory samples will be collected at near the interface of the secondary containment system and the soil, 1 m, and 2 m where there is visual evidence of a release. In conjunction with each sampling event, field soil duplicate samples and equipment decontamination final rinsate samples will be collected.

The samples to verify effective decontamination of process equipment will be collected as needed based on the criteria established by the data quality objectives. All wash water will be sampled to characterize it prior to disposal. A summary of the estimated number, location or type, and matrix of the samples is shown in Table 3, Sample Summary.

2.3.3. Analytical Methods and Detection Limits

Romic will utilize the Test Methods for Evaluating Solid Waste, SW-846, U.S. Environmental Protection Agency, Third Edition, November 1986 ("SW-846"), to evaluate the confirmatory soil samples. The following SW-846 methods will be used to evaluate the confirmatory soil samples:

- EPA Method 8260B for volatile organic constituents;
- EPA Method 8270C for semi-volatile organic constituents;
- EPA Method 8440 for total recoverable petroleum hydrocarbons;
- EPA Method 9045C for soil and waste pH;
- EPA Method 6010B for metals; and
- EPA 8081A for organochloride pesticides.

Detection limits are set to at least the PQLs specified in SW-846.

2.4. Data Evaluation Procedures

Metals are reported as concentrations, so the cleanup levels for these analytes will be based on the 99th percentile of their concentration distribution in background soil samples.

- Determine Cleanup Levels
  - Collect and analyze background level soil samples (metals only).
  - Determine degree of data censoring (metals only).
  - Determine distribution of data (metals only).
  - Calculate mean and standard deviation of sample set (metals only).
  - Calculate required number of samples. Collect additional samples as needed (metals only).
  - Calculate Cleanup Levels for each analyte (metals only).
  - Cleanup Levels are considered as non-detect for organic constituents.
- Compare Confirmatory Samples from areas of suspected releases to Cleanup Levels
  - Sample each area where a release is suspected. Analyze the samples.
  - If Cleanup Levels are exceeded, conduct additional excavation in area of exceedance(s) and re-sample.
  - If Cleanup Levels are met, document results in area acceptance package.
  - Project Manager reviews sample results and statistical calculations and signs acceptance package to authorize backfilling of each area.

3. MEASUREMENT/DATA ACQUISITION

This section provides the sampling and analysis procedures, including sample collection, documentation and custody, and analytical method requirements. These requirements ensure that appropriate methods are employed and documented.

3.1. Sampling Method Requirements

This section describes the methodology for sampling each medium, sampling equipment, decontamination procedures, sample container and preservation requirements, and sample handling and packaging procedures.

3.1.1. Sample Collection

This section describes the sample collection methods for the soil, chip, wipe, and liquid (rinsate) samples.

Soils

Samples will be collected using either hand augers, shallow test pits, or direct push sampler (for example, Geoprobe). The borings will be continuously cored and boring logs generated. The *field geologist will screen extracted soil cores for physical* evidence of contamination (e.g., odors, chemical sheen, or discoloration). After the samples are collected, each boring will be backfilled with grout.

For direct push sampling, the soil samples will be removed from the sampling device, sealed with Teflon tape, capped, labeled, and placed in a pre-chilled ice chest. The soil samples from other sampling techniques will be transferred into appropriate laboratory-precleaned sample containers, and placed in a pre-chilled ice chest. If a sample of soil cannot be obtained at the exact location required because of boulders, loose sands, or other unfavorable conditions, a sample will be collected at a location adjacent to the prescribed location. Duplicate soil samples may be collected by dividing the sample. If the sample is too loose or otherwise not divisible, the sample will be homogenized and then divided into the duplicate pair. All sampling equipment will be decontaminated before each use.

Chip

Chip sampling will be performed on areas with porous surfaces such as asphalt, concrete, or wood. Chip samples will be obtained by chiseling out the top the top 2 cm of a 10 cm x 10 cm area and will represent an area of no more that 100 m^2. The chip samples will be transferred into appropriate laboratory-precleaned sample containers. All sampling equipment will be decontaminated before each use.

Wipe

Wipe sampling will be performed on areas with smooth and impervious surfaces such as metal tanks, metal buildings, and epoxy coated concrete. Wipe samples will be obtained by using filter paper or gauze pads that are moistened with an appropriate solvent. The sampling material will be held in place by a pair of stainless steel forceps and is used to swab an area that is marked with a template. Wipe samples size will typically be 100 cm^2 and will represent an area of no more than 100 m^2. The wipe samples will be transferred into appropriate laboratory-supplied clean sample containers. All sampling equipment will be decontaminated before each use.

Liquids

Samples of liquids will consist of the sampling equipment rinsate fluids from the soil sampling program, decontamination confirmation rinsate samples, and the equipment decontamination washwater samples. The equipment rinsate samples will be collected by pouring reagent-grade water over, or through, the equipment or item to be sampled. Where possible the samples will be collected by pouring the rinsate directly into the final sample container. The sample container should be filled completely, excluding any headspace, and with a minimum of aeration. If transfers between containers, such as beakers or flasks, are required, these will be minimized to the extent possible. Disposable or laboratory-supplied clean containers will be used for the transfers if possible. Each time a rinsate sample is collected, it should be from a different equipment item that has been decontaminated, that day. Samples of washwater will be collected from within the vessels used to collect the washwater using a dipper as described in Chapter 9 of SW-846.

3.1.2. Decontamination Procedures

Proper decontamination of sampling equipment is essential to prevent accidental cross-contamination of samples. Sample collection equipment items that will require decontamination include reusable collection containers and trowels. A decontamination area will be designated and equipped with the necessary equipment (pressure-washer, wash buckets, brushes, spray bottles, potable water, distilled water, towels, etc.).

The following procedures will be used for the decontamination of nondisposable soil and liquid sampling equipment.

For small equipment items such as trowels or spoons:

- Scrub with a brush and potable water to remove visible contamination.
- Rinse with clean potable water.
- Dry with disposable towels.

Process equipment decontamination procedures are described in Section I1.5.2 of the Closure Plan.

3.1.3. Sample Preservation and Storage

Following collection, the samples will be properly stored to prevent degradation of their integrity. Table 4, Summary of Sample Container, Preservation, and Holding Time Requirements, summarizes the preservation and holding time requirements for analyses of the soil and liquid samples.

3.1.4. Sample Packaging and Shipping Procedures

This section describes the procedures for packaging and transporting the samples from the point of collection to delivery to the laboratory. Samples will be sealed in the appropriate sampling container using rubberized tape, electrical tape, or an equivalent. A chain-of-custody seal will be placed over the tape. The samples will be packed securely in an ice chest containing ice sealed in double plastic bags. All samples will be cooled to 4°C during storage and prior to transfer to the laboratory.

3.2. Sample Documentation and Custody Requirements

Each sample and/or measurement will be properly documented to facilitate timely, correct, and complete analysis of data. The documentation system is used to identify, track, and monitor each sample from the point of collection through final data reporting. Chain-of-custody is necessary if there is any possibility that the analytical data or conclusions based upon analytical data will be used in litigation. A sample is considered to be in a person's custody if it is: 1) in a person's physical possession, 2) in view of the person after taking possession, or 3) secured by that person so that no one can tamper with it.

3.2.1. Field Sample Custody and Documentation

Sample custody and documentation are necessary to demonstrate the integrity of the sample from time of collection until delivery to the process or offsite analytical laboratory. The documentation required includes logbooks, sample labels, custody seals (for offsite samples), and chain-of-custody forms.

Logbooks. Logbooks will document where, when, how, and from whom any vital program information was obtained. Logbook entries will be complete and accurate enough to permit reconstruction of field activities. At a minimum, the following sampling information will be recorded:

- Sample location, station location, and description.
- Sample number.
- Sampler's name(s).
- Date and time of sample collection.
- Designation of sample as composite or grab.
- Type of sample (i.e., matrix).
- Type of sampling equipment used.
- Type of preservation used.
- Shipping arrangements and airbill number (as applicable).
- Recipient laboratory(ies).

Logbooks will be bound, ruled, and each page prenumbered. All entries in logbooks will be in indelible ink, and corrections will be made by striking out erroneous information and initializing the change. "White out" will not be used.

Labeling. All samples collected will be labeled in a clear, precise way for proper identification in the field and for tracking in the laboratory. The samples will have preassigned, identifiable, and unique numbers. At a minimum, the sample labels will contain the following information:

- Facility name.
- Sample number.
- Date of collection.
- Time of collection.
- Analytical parameter.
- Method of preservation.

Custody Seals. Custody seals (offsite analysis only) will be used to preserve the integrity of each sample container and cooler from the time it is collected until it is opened by the offsite laboratory. A custody seals will be placed on each sample container after collection such that it must be broken to open the container. Two or more custody seals will be signed, dated, and placed on the front and back of the sample cooler prior to transport. If samples are to be transported to the onsite laboratory, and analysis will be immediately performed, custody seals on the individual sample containers are not necessary.

Chain-of-Custody Records. Chain-of-custody forms will be used for all samples delivered to the process laboratory and offsite laboratories to ensure that the integrity of the samples is maintained. Each form will include the following information:

- Sample number.
- Date of collection.
- Time of collection.
- Analytical parameter.
- Method of preservative.
- Number of sample containers.
- Shipping arrangements and airbill number, if applicable.
- Recipient laboratory.
- Signatures of parties relinquishing and receiving the sample at each transfer point.

A coding system will be used to identify each sample. The system will allow for quick data retrieval and tracking to account for all samples. The sample designation will be assigned at the time of sample collection and recorded on the sample label, and logbook, and will comprise three parts or fields:

- Part 1 of the sample designation consists of a field (two digits) indicating the sampling event. The designation "BL" will be used for the background level soil sampling event, the designation "CO" will be used for the confirmatory sampling event, and "DV" will be used for decontamination verification.
- Part 2 is a four-digit field corresponding to the sample type ("soil", "chip", "wipe", or "rins" for rinsate samples).
- Part 3 is a three-digit field that corresponds to the sequential number of sample collection.

Duplicate sample will be given the next number in the sampling sequence. For example:

Sample Designation	Description
BLSOIL031	The 31st background level soil sample collected
CORINS004	The 4th confirmatory rinsate sample collected
CORINS005	Duplicate of sample CORINS004, above
DVRINS23	The 23rd decontamination verification sample collected

3.2.2. Laboratory Custody

The laboratory is to document all transfers of each sample within the laboratory system (e.g., the transfer of the sample from the sample custodian to the analyst for obtaining a sample aliquot and then the transfer of the sample back to the sample custodian). Additionally, all transfers of all sample extracts and digests will be recorded. This may be accomplished through the use of a sample preparation sheet with a signature block for documenting the transfer of the samples or by using a separate digest/extract custody transfer form.

3.3. Analytical Methods Requirements

Analytical method and quality control requirements are specified in Section C, Appendix C-3, Quality Assurance Program Plan. The laboratory selected for closure sampling must be a California-certified laboratory for the specific test methods used during closure sampling.

3.4. Laboratory Quality Assurance/Quality Control Samples

Laboratory quality assurance requirements are specified in Section C, Appendix C-3, Quality Assurance Program Plan.

3.5. Field Quality Control Samples

QC samples will consist of field duplicate samples and equipment rinsates.

3.5.1 Field Duplicate Samples

Duplicate samples will be collected for use as a measure of the precision of the sample collection and analysis process. The duplicate will be submitted with minimal indication of the site it was taken from. Duplicates will be prepared following standard sampling and preparation techniques as described in this section. Duplicates will be collected and submitted to the laboratory at a frequency of one per day or 5 percent (i.e., 1 per 20) of routine samples, whichever is more frequent. The relative percent difference (RPD) between field duplicate pairs will be evaluated against the precision criteria to determine data acceptability.

3.6. Special Training Requirements/Certification

All personnel directly involved in sample collection, handling, analysis, and data evaluation will be provided with a copy of this SAP. The management of the participating field or laboratory organization will establish personnel qualifications and training requirements for the project. The Romic Project Manager will ensure each person participating in the project has the education, training, technical knowledge, and experience, or a combination thereof, to enable that individual to perform assigned functions. Training will be provided for each staff member as necessary to perform his or her functions properly. Personnel qualifications will be documented in terms of education, experience, and training, and periodically reviewed to ensure adequacy to current responsibilities. Examples of topics for which training is required, as applicable to the position, include:

- Safety.
- Quality Assurance Project Plan.
- SOPs.
- General field sampling techniques.
- Specific sampling protocols.
- Equipment calibration and maintenance.
- Corrective action.
- Data reduction and validation.
- Reporting.
- Records management.
- Demonstration of proficiency.

- Project-specific requirements.

3.7. Documentation and Records

The following sections describe required documentation and records for training, field, and laboratory activities.

3.7.1 Training Activities

Training will be documented and records kept on file and readily available for review. Documentation of training may be accomplished by 1) including a summary of the training and the topics or items covered at the top of the attendance sheet, and/or 2) including a copy of the slides, handouts, etc. used in the training session.

3.7.2 Facility and Laboratory Activities

Records provide the direct evidence and support for the necessary technical interpretations, judgments, and discussions concerning program activities. These records, particularly those that are anticipated to be used in permitting documents, will directly support current or ongoing technical studies and activities and provide the historical basis for later reviews and analyses. Records will be legible, identifiable, and retrievable and protected against damage, deterioration, or loss. The discussion in this section outlines procedures for record-keeping. Organizations that conduct sampling and analyses will develop appropriate record-keeping procedures that satisfy relevant technical and legal requirements.

Records will consist of bound notebooks with prenumbered pages, sample collection forms, personnel qualification and training forms, sample location figures/drawings, equipment maintenance and calibration forms, chain-of-custody forms, sample analysis request forms, and change request forms. All records will be written in indelible ink.

Procedures for reviewing, approving, and revising records will be clearly defined, with the lines of authority included. All documentation errors will be corrected by drawing a single line through the error so it remains legible and will be initialed by the responsible individual, along with the date of change. If appropriate, the reason for the change will also be indicated. The correction will be written adjacent to the error.

Records will include but will not be limited to the following.

Sample Collection

To ensure maximum utility of the sampling effort and resulting data, documentation of the sampling protocol, as performed, is essential. Sample collection records will contain, at a minimum, the names of persons conducting the activity, sample number, sample location,

equipment used, ambient conditions, documentation of adherence to protocol, and unusual observations. The actual sample collection record will be one of the following: a bound field notebook with prenumbered pages, a preprinted form, or digitized information on a computer tape or disc.

Chain-of-Custody Records

The chain-of-custody, which involves the possession of samples from the time they are obtained until they are disposed of or shipped off site, will be documented and will include the following information: (1) the program name; (2) name and signature of samplers; (3) the sample number, date, and time of collection, grab or composite sample designation, and requested analysis; (4) name and signature of individuals involved in sample transfer; and (5) if applicable, the airbill or other shipping number.

QC Samples

Documentation for identification of QC samples, such as equipment rinsate blanks and duplicate samples, will be maintained.

Deviations

All deviations from procedural documents and the SAP will be maintained in the operating record. A nonconformance record will be generated for each and every deviation.

Reports

A copy of all reports issued and any supporting documentation will be retained.

4. ASSESSMENT AND OVERSIGHT

This section describes the data assessment and oversight program, including procedures for response actions, nonconformance correction actions, and reports to management.

4.1. Nonconformance and Corrective Action

Nonconformance and corrective action requirements are specified in Section C, Appendix C-3, Quality Assurance Program Plan.

4.2. Assessments and Response Actions

Assessments and response requirements are specified in Section C, Appendix C-3, Quality Assurance Program Plan.

4.3. Reports to Management

Reports to the Closure Project Manager will include the program progress, a summary of key performance indicators, a summary of the nonconformance and corrective actions, surveillance and audit findings, and data validation reports. Each report, as appropriate, will include a section that provides an overall assessment of the sampling and laboratory programs.

5. DATA VALIDATION AND USABILITY

This section describes the data assessment and oversight program, including procedures for data review, validation, and verification and reconciliation with data quality objectives.

5.1. Data Review, Validation, and Verification Requirements

Data review, validation, and verification requirements are specified in Section C, Appendix C-3, Quality Assurance Program Plan.

5.2. Reconciliation with Data Quality Objectives

Reconciliation with data quality objective requirements are specified Section C, Appendix C-3, Quality Assurance Program Plan.

TABLES

Table 1
Data Quality Indicators

Data Quality Indicator	Goal
Precision	±50% RPD for Field Duplicates ±35% RPD for Laboratory Duplicates
Accuracy	70 – 130% Recovery
Representativeness	NA
Completeness	95%

Table 2
Sampling Grid Design

Step 1	– Generate a set of coordinates (X, Y) for the grid origin using the following equations: $X = X_{min} + (X_{max} - X_{min}) * RND$ $Y = Y_{min} + (Y_{max} - Y_{min}) * RND$ RND is a random number between 0 and 1. Random numbers can be obtained from scientific calculators, personal computers, or a random number table. X max, Y max and X min, Y min, are the maximum and minimum coordinates, respectively, of the containment area, as shown on Figure 5.
Step 2	– If (X, Y) is outside of the area, repeat Step 1 with a new set of random numbers. Record (X, Y) – the coordinates of the grid origin. These coordinates may be rounded to the nearest five feet for convenience in laying out the grid, if desired.) X = _____ Y = _____
Step 3	– Lay out the sample grid using a 5-foot spacing as shown on Figure 5.

Table 3
Sample Summary

Sample Type	Matrix	Location	Estimated Quantity	Sample Designation	Analysis					
					SW-846 8260B	SW-846 8270C	SW-846 8440	SW-846 9045C	SW-846 6010B	SW-846 8081A
Background Level Soil	Soil									
Background Level Soil – Field Duplicate	Soil	Various								
Background Level Rinsate	Aqueous	N/A								
Confirmatory	Soil	North storage building								
Confirmatory	Soil	South storage building								
Confirmatory	Soil	Sampling area								
Confirmatory	Soil	West storage building #1								
Confirmatory	Soil	West storage building #2								
Confirmatory	Soil	Drum and Debris Processing Building								
Confirmatory	Soil	Tankfarm A								
Confirmatory	Soil	Tankfarm B								
Confirmatory	Soil	Tankfarm C								
Confirmatory	Soil	Tankfarm D								
Confirmatory	Soil	Tankfarm E*								
Confirmatory	Soil	Tankfarm F*								
Confirmatory	Soil	Tankfarm G								
Confirmatory	Soil	Tankfarm H								
Confirmatory	Soil	Tankfarm I								
Confirmatory	Soil	Tankfarm J								
Confirmatory	Soil	Tankfarm K								
Confirmatory	Soil	Tankfarm L								

*Proposed Area

Table 3
Sample Summary (cont.)

Sample Type	Matrix	Location	Estimated Quantity	Sample Designation	Analysis					
					SW-846 8260B	SW-846 8270C	SW-846 8440	SW-846 9045C	SW-846 6010B	SW-846 8081A
Confirmatory	Soil	Tankfarm MNO								
Confirmatory	Soil	Tankfarm Q								
Confirmatory	Soil	Tankfarm R								
Confirmatory	Soil	Tankfarm S*								
Confirmatory	Soil	Tankfarm T*								
Confirmatory	Soil	HTU								
Confirmatory	Soil	Production Area								
Confirmatory	Soil	Truck Wash								
Confirmatory	Soil	Paint Can Crush*								
Confirmatory	Soil	Carbon Regeneration								
Confirmatory	Wipe/Chip	North storage building (1 proposed process unit equipment)								
Confirmatory	Wipe/Chip	South storage building								
Confirmatory	Wipe/Chip	Sampling area								
Confirmatory	Wipe/Chip	West storage building #1								
Confirmatory	Wipe/Chip	West storage building #2								
Confirmatory	Wipe/Chip	Drum and Debris Processing Building								
Confirmatory	Wipe/Chip	Tankfarm A (14 tanks or process unit equipment)								
Confirmatory	Wipe/Chip	Tankfarm B (5 tanks)								

*Proposed Area

Table 3
Sample Summary (cont.)

Sample Type	Matrix	Location	Estimated Quantity	Sample Designation	Analysis					
					SW-846 8260B	SW-846 8270C	SW-846 8440	SW-846 9045C	SW-846 6010B	SW-846 8081A
Confirmatory	Wipe/Chip	Tankfarm C (9 tanks)								
Confirmatory	Wipe/Chip	Tankfarm D (2 tanks)								
Confirmatory	Wipe/Chip	Tankfarm E* (5 proposed tanks)								
Confirmatory	Wipe/Chip	Tankfarm F* (5 proposed process unit equipment)								
Confirmatory	Wipe/Chip	Tankfarm G (8 tanks or process unit equipment)								
Confirmatory	Wipe/Chip	Tankfarm H (6 tanks)								
Confirmatory	Wipe/Chip	Tankfarm I (12 tanks or process unit equipment, 3 proposed)								
Confirmatory	Wipe/Chip	Tankfarm J (5 process unit equipment)								
Confirmatory	Wipe/Chip	Tankfarm K (13 process unit equipment)								
Confirmatory	Wipe/Chip	Tankfarm L (7 tanks)								
Confirmatory	Wipe/Chip	Tankfarm MNO (14 tanks or process unit equipment)								
Confirmatory	Wipe/Chip	Tankfarm Q (14 tanks or process unit equipment, 6 proposed)								
Confirmatory	Wipe/Chip	Tankfarm R (3 tanks or process unit equipment)								
Confirmatory	Wipe/Chip	Tankfarm S* (4 proposed process unit equipment)								
Confirmatory	Wipe/Chip	Tankfarm T* (4 proposed process unit equipment)								

*Proposed Area

Table 3
Sample Summary (cont.)

Sample Type	Matrix	Location	Estimated Quantity	Sample Designation	Analysis					
					SW-846 8260B	SW-846 8270C	SW-846 8440	SW-846 9045C	SW-846 6010B	SW-846 8081A
Confirmatory	Wipe/Chip	HTU (1 process unit equipment)								
Confirmatory	Wipe/Chip	Production Area (25 process unit equipment, 5 proposed)								
Confirmatory	Wipe/Chip	Truck Wash (1 process unit equipment)								
Confirmatory	Soil	Paint Can Crush*								

*Proposed Area

Table 4
Summary of Sample Container, Preservation,
and Holding Time Requirements

Analyte/Method	Sample Matrix	Sample Container	Preservation	Maximum Holding Time
Volatile organic constituents (SW-846 Method 8260)	Solid	4-ounce clear wide mouth glass bottle	Cool to 4°C	14 days
Volatile organic constituents (SW-846 Method 8260)	Liquid	40 mL glass vial	$Na_2S_2O_3$, HCl to pH < 2, Cool to 4°C	14 days
Semi-Volatile organic constituents (SW-846 Method 8270)	Solid	8-ounce clear wide mouth glass bottle	Cool to 4°C	7 days to extraction; 40 days for analysis
Semi-Volatile organic constituents (SW-846 Method 8270)	Liquid	1-liter amber Boston Round glass bottle	008% $Na_2S_2O_3$, Cool to 4°C	7 days to extraction; 40 days for analysis
Total Recoverable Petroleum Hydrocarbons (SW-846 Method 8440)	Solid	4-ounce clear wide mouth glass bottle	N/A	Analyze ASAP
Soil and Waste pH (SW-846 Method 9045C)	Solid	4-ounce clear wide mouth glass bottle	N/A	Analyze ASAP
Soil and Waste pH (SW-846 Method 9045C)	Liquid	60-mL high density polyethylene bottle	N/A	Analyze ASAP
Metals (SW-846 Method 6010)	Solid	8-ounce clear wide mouth glass bottle	HNO_3 to pH < 2	6 months
Metals (SW-846 Method 6010)	Liquid	1-liter high density polyethylene bottle	HNO_3 to pH < 2	6 months
Organochloride Pesticides (SW-846 Method 8081A)	Solid	8-ounce clear wide mouth glass bottle	008% $Na_2S_2O_3$, Cool to 4°C	7 days to extraction; 40 days for analysis
Organochloride Pesticides (SW-846 Method 8081A)	Liquid	1-liter amber Boston Round glass bottle	008% $Na_2S_2O_3$, Cool to 4°C	7 days to extraction; 40 days for analysis

Figures

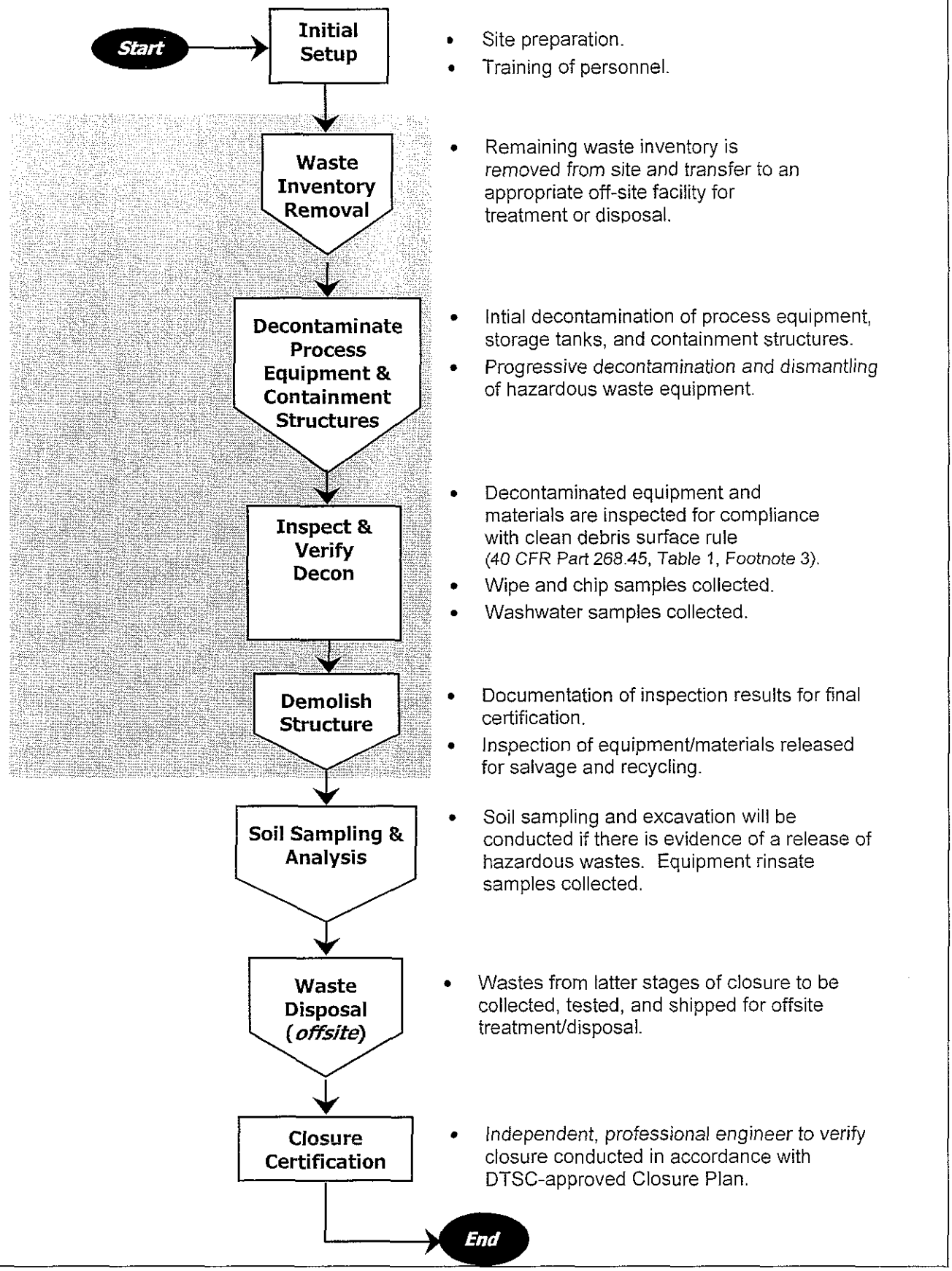
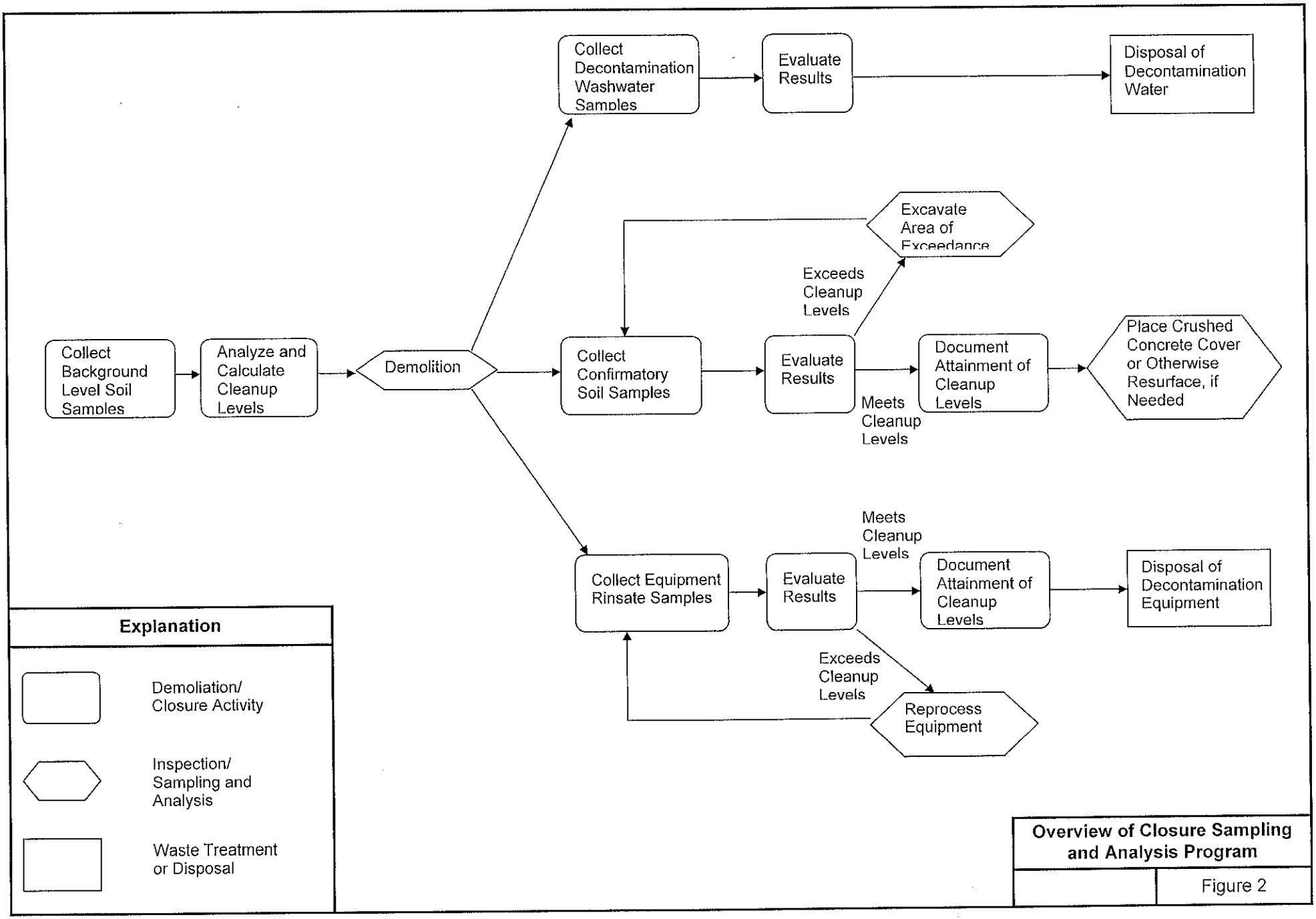
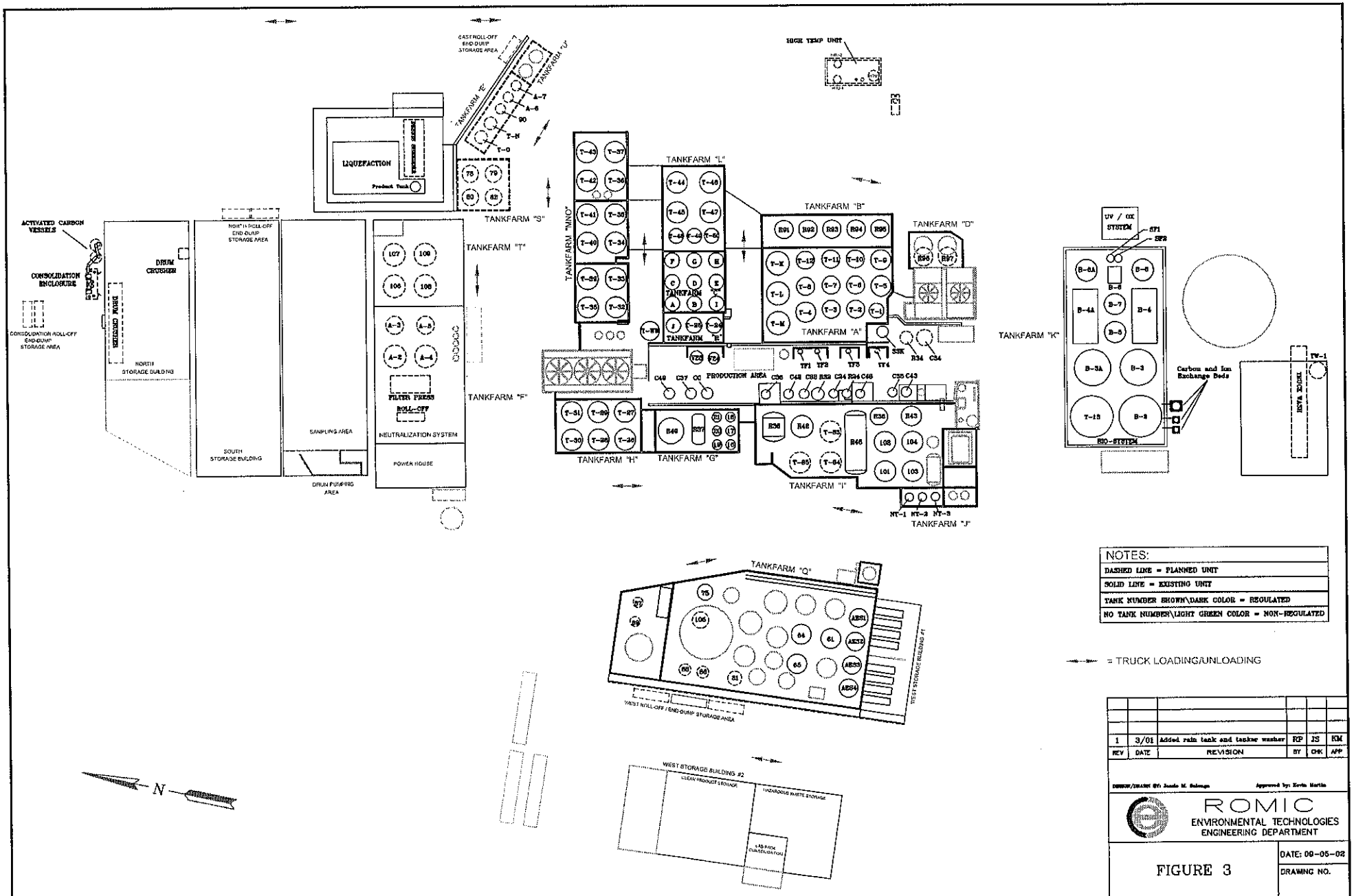


Figure 1
Overview of Closure Process for Romic Facility



Overview of Closure Sampling and Analysis Program

Figure 2



NOTES:
DASHED LINE = PLANNED UNIT
SOLID LINE = EXISTING UNIT
TANK NUMBER SHOWN\DARK COLOR = REGULATED
NO TANK NUMBER\LIGHT GREEN COLOR = NON-REGULATED

= TRUCK LOADING/UNLOADING

REV	DATE	REVISION	BY	CHK	APP
1	3/01	Added rain tank and tanker washer	KP	JS	KM

DESIGN/DRAWN BY: Jessie M. Salonga — Approved by: Kevin Martin

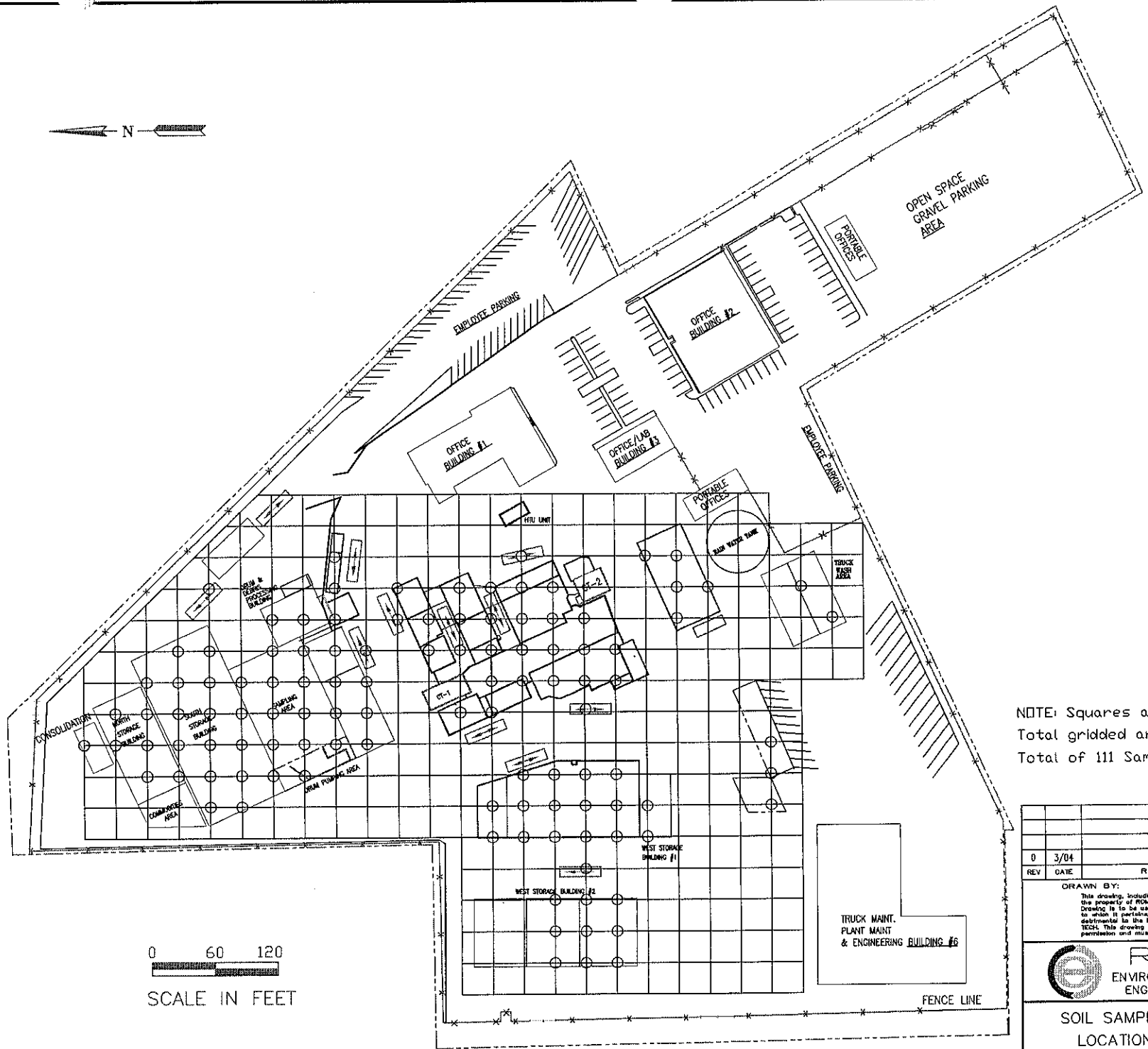
ROMIC
ENVIRONMENTAL TECHNOLOGIES
ENGINEERING DEPARTMENT

FIGURE 3

DATE: 09-05-02

DRAWING NO.

I/COMMON/PART-B-2000\SITE PLANS\CLAYTON GROUP\FACILITY D-1 FACILITY LAYOUT/01



NOTE: Squares are 30 ft x 30 ft
Total gridded area is 6.2 acres
Total of 111 Sample points

REV	DATE	REVISION	BY	CHK	APP
0	3/04	NONE	RP	KM	KM

DRAWN BY: ROBERT PIGNATTI

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ENGINEERING DEPARTMENT

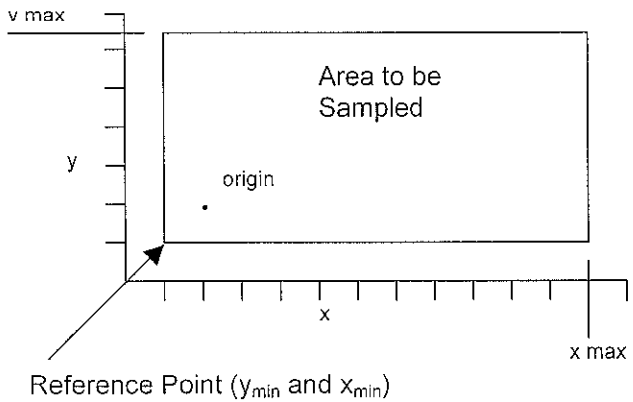
SOIL SAMPLING LOCATIONS
EAST PALO ALTO, CA

DATE: 4-30-02

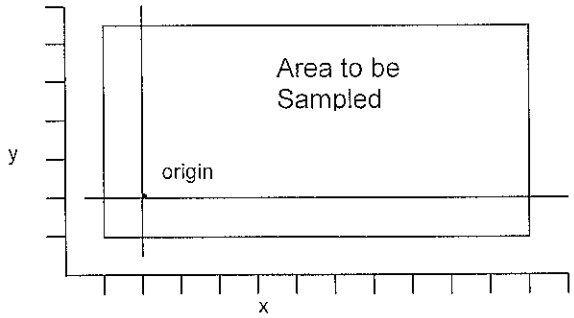
FIGURE NO. Figure 4

I:\COMMON\PART-B FINAL 2000\SITE PLANS\CLAYTON GROUP\Figure 4 Soil Sampling Locations

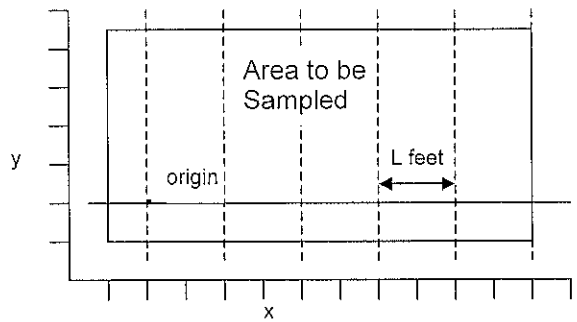
1. Select random origin point (see Table 2)



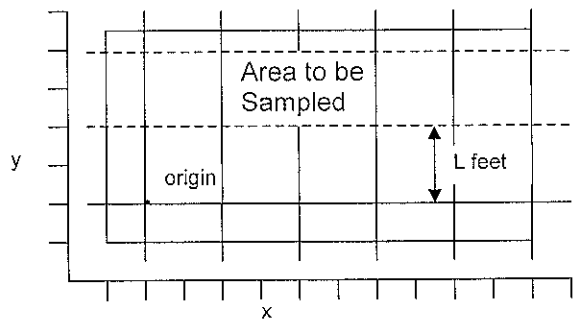
2. Construct coordinate axes going through random origin point



3. Construct lines parallel to vertical axis separated by L feet



4. Construct lines parallel to the horizontal axi separated by L feet



NOTE:

Typical grid spacing (L) will be 5 feet

Guide to Establishing Sampling Grid	
	Figure 5

ATTACHMENT C

PARTIAL CLOSURE ACTIVITIES

Partial Closure Activities

Tanks

- Drain the tank of all liquids.
- Open the tank and visually inspect for sludges. If sludges are present, go to next step; if not, skip next step and proceed with steam cleaning.
- Conduct a confined space entry, following procedures set forth in Romic's Health and Safety Plan, and pump sludge from tank. The addition of solvents may be employed to facilitate the dissolving of solids to allow the vacuum removal of sludges. (2 days)
- Steam clean or water wash the tank to achieve "clean debris standards" on the tank walls.
- Disconnect piping and any other associated ancillary equipment from the tank.
- Remove the tank from the secondary containment system.
- Visually inspect the secondary containment system and foundation that supported the tank for any cracks or deterioration in the concrete and protective coatings.
- A professional engineer registered in the State of California, or their agent, will inspect and certify that the tank meets the "clean debris surface" standards of Table 1 CCR 66268.45.
- If the tank still contains residue that could not be removed, the tank will be managed as a hazardous waste and shipped off-site to an authorized facility for further management. It may be necessary to cut the tank into sections for shipment off-site.

Piping:

- Steam clean or pressure wash the pipe collecting all rinse water and contaminants.
- Disconnect piping from tank.
- Triple rinse with caustic solution, collecting the rinse water for further management as a hazardous waste.
- Visually inspect to ensure "clean debris surface" standards have been met on the inside and outside of piping walls. If necessary, dismantle or cut piping. If unable to visually inspect, Romic may dispose of contaminated piping as hazardous waste/contaminated debris.
- A professional engineer registered in the State of California, or their agent, will inspect and certify that the piping meets the "clean debris surface" standards of Table 1 CCR 66268.45.
- Manage the residues as a hazardous waste unless analytical results indicate that the waste is not hazardous.
- Romic may elect to skip decontamination procedures for piping and manage the piping as a hazardous waste for disposal at an off-site authorized facility.

Pumps

- If possible, use the pump associated with the ancillary equipment to pump the caustic wash solution during the triple rinsing operation.

- If the pump is not operational, or the capacity is not appropriate for the triple rinsing operation, disassemble the pump and submerge all areas which have contacted hazardous waste in cleaning solvent (e.g., n-Methyl Pyrrolidine) for 1-3 hours. Follow the solvent decontamination step with a caustic wash.
- A professional engineer registered in the State of California, or their agent, will inspect and certify that the pump meets the closure performance standard.
- Manage the residues as a hazardous waste unless analytical results indicate that the waste is not hazardous.
- Romic may elect to skip the decontamination procedures describe above and ship the contaminated pump off-site as a hazardous waste.

Secondary Containment systems:

It is unlikely that any secondary containment systems will undergo partial closure, however if unforeseen events require a secondary containment system to be closed, the system will be closed per the applicable requirements specified in the Section 1.2, Closure Performance Standards.